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DIESEL RAILWAY TRACTION

The January issue of this RAILWAY GAZETTE *publication, illustrating and describing developments in Diesel Railway Traction, will be ready on January 1, price 2s.*

Transport Administration in Tropical Dependencies

By George V. O. Bulkeley, C.B.E., M.I.Mech.E.
With Chapters on Finance, Accounting, and Statistical Method
IN COLLABORATION WITH
Ernest J. Smith, F.C.I.S.
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Railway Wage Dispute

THE negotiations which have been in progress for some time between the railway trade unions and the Railway Executive, Hotels Executive, London Transport Executive, and Docks & Inland Waterways Executive, were the subject of a special delegate conference called by the National Union of Railwaymen last week. This conference had been called to consider the rejection of the union's claim for a wage increase of 12s. 6d. a week. The conference decided to give the Minister of Labour formal notice that a dispute existed between the union and the various Executives. The effect of this is that, if the Minister does not intervene within the next three weeks, the N.U.R. will consider itself free to call a national railway strike. The Minister may either call together representatives of the union and the various Executives to urge them to make another effort to settle their dispute; he can refer the matter to arbitration; or he can set up a court of inquiry. The 12s. 6d. which the union is claiming is a part of a claim for an increase of £1 a week made over a year ago, and of which a court of inquiry awarded 7s. 6d.

* * * *

Mr. C. J. Selway, C.V.O., C.B.E., T.D.

On Christmas Eve, another link with the railways, as they existed before the 1923 grouping, was snapped when Mr. C. J. Selway died at Frinton-on-Sea. Railwaymen of the older generation will remember him best as Superintendent of the Line, Great Northern Railway, during the difficult years from 1914 to 1923. He then kept the services from Kings Cross to the North going with remarkable efficiency, the Leeds trains in particular maintaining a high standard of comfort and punctuality. On the amalgamation, Mr. Selway became Passenger Manager of the Southern Area, L.N.E.R. The separation from operating duties was a wrench to him, but he proceeded to establish himself as spokesman for the Superintendents on commercial questions. His mental equipment and style of address were suited admirably to the conduct of Railway Clearing House business. He presided over many committee meetings with unfailing exactitude, and ended his active service in 1942 as Chairman of the Railway Executive Committee of Passenger Superintendents. Conservative as his outlook was in some ways, Mr. Selway had a kindly side for young men with ideas and thrust.

* * * *

Four-Year Production Programme

The Government's four-year programme of production, investment, and exports for the period to the end of Marshall aid in mid-1952 has been issued as a White Paper.* The programme envisages an increase in the volume of exports to at least 50 per cent. of 1938—rather more than 10 per cent. above 1948; capital investment at a rate of about £2,000 millions; 15-20 per cent. increase in the supply of manufactured goods to the home consumer and a substantial increase in supplies of home-grown food to replace imports. Manufacturing output is to be expanded in four years to a level about 40 per cent. above 1938 and 13 per cent. above the first nine months of 1948. Compared with 1948, it is hoped to raise coal output by nearly one-quarter, electricity generating capacity by nearly one-half, and output of steel by nearly one-sixth. Still further expansion is called for from the engineering industries, whose output is already half as great again as before the war. This would enable home industry to obtain more capital equipment and at the same time maintain exports at a high level.

* * * *

T.U.C. and Nationalised Industries

The General Council of the Trades Union Congress still entertains doubts as to the efficiency of the structure and operation of the nationalised industries. Largely with a view to appeasing the railway workers, it is believed, the General Council has issued a statement saying that a further review of the administrative arrangements and conduct of nationalised industries is to be undertaken, together with an examination of their current problems, as a preliminary to further discus-

* "European Co-operation: Memoranda submitted to the Organisation for European Economic Co-operation Relating to Economic Affairs in the Period 1949-1953." Cmd. 7572. H.M. Stationery Office. Price 1s. 3d.

sions with the Labour Party. Already a study has been made of the composition of the boards, joint consultative machinery, the problem of providing a reasonable degree of decentralisation without detriment to the need for co-ordinated effort on matters of major policy, and the extent of training promotion and facilities available to workers. It is expected that the present review, which is being made both separately and in consultation with the Labour Party, will be the subject of a report to be presented at next year's Labour Party Conference and also at the next Trades Union Congress.

* * * *

The Preparation of the First Area Scheme

The British Transport Commission requested the Road Transport Executive to make preliminary investigations with a view to an area scheme being prepared in respect of passenger road transport services in the North-East. Accordingly, an informal conference was held in Newcastle on December 21, under the Chairmanship of Major-General G. N. Russell, Chairman of the R.T.E. It was attended by representatives of four northern County Councils and nine County Boroughs, and decided that the area to be dealt with should include Northumberland, Durham, and part of the North Riding of Yorkshire, but should exclude Cumberland. This is the first step towards the preparation of area schemes (provisionally twelve) under Part IV of the Transport Act. This informal meeting was quite separate and distinct from the formal consultations with local authorities and providers of transport at a later stage, and, in fact, was a preliminary meeting with local authorities in their capacity as representatives of the public, and not as providers of transport. The R.T.E. is setting up a sub-committee in the area to hold consultations with local authorities, and this sub-committee will recommend a southern boundary for the area; the suggested line at present runs from Scarborough through Pickering, Helmsley, Thirsk, Northallerton, and Bedale, to Hawes, whence it follows roughly the Pennine Chain to the Scottish Borders.

* * * *

Omnibus Passengers Protection Association

The step towards so-called integration in the North-East, referred to in the previous note, has received a mixed public reception, and, immediately the informal conference was announced, a movement "to protect the interests of bus, tram, and trolley passengers in North-Eastern England" was launched in Newcastle-upon-Tyne. The Omnibus Passengers Protection Association was formed to "awaken public opinion to the harm that nationalisation of road passenger transport would inflict on the travelling public." This Association issued a manifesto in which it said that any scheme proposed for the area was likely to result in higher bus fares, higher coach fares, and inferior services, all designed to reduce the losses that are being incurred on British Railways. The Association has given wide publicity to the remark made last year by Sir Frederick Heaton that "one of the first incentives in a unified system is for rail and road passenger fares to be brought into better relation. Put bluntly, that means that all road fares which are in competition with the rail should be considerably increased, and many railway fares possibly reduced," and to a similar remark of the Parliamentary Secretary to the Minister of Transport. Doubtless it was in view of the activities of this Association that General Russell denied rumours of early fare alterations.

* * * *

Rail Transport of Quick-Frozen Foods

During the war the railways were called on to convey a large quantity of frozen pancreas glands used in the manufacture of insulin. Leading from the original experimental container they were able to evolve a highly insulated container now known as the AF type which gives excellent results under everyday running conditions. The container was subjected to rigorous tests by the railways, and also by traders dealing in frozen fish, ice cream, and quick frozen foods, and the trials produced evidence of controlled temperature transits where the heat rise was reduced to from 2° F. to 3° F. in 24 hours with initial load temperatures of between −5° F. and +5° F. As a result the railways embarked on a constructional programme, now nearing completion, to provide a stock of over 80 insulated containers. Each container has a loading capacity of from 2½ to 3 tons and the insulation is 9 in. thick and embraces the whole container. The door has been constructed to give a perfect seal. A special open-work grid, fitted in the floor, allows the cold air produced by the solid CO_2 to circulate freely under the load, while the metal lining of the walls, roof, and floor enhances the cleanliness and conductivity of the unit.

* * * *

Training British Railways Police

With the war came a great increase in crime which shows no signs of abating at the present time. For offences on British railways alone there were no fewer than 23,000 prosecutions in 1947, including more than 8,000 for larceny and kindred offences. With the war, also, recruiting for the railway police was practically suspended, with the result that, although on the cessation of hostilities steps were taken by the four main-line railway companies to make good the deficiency as soon as possible, today the total police force of British Railways is still only 4,000 strong, much below the strength necessary to provide adequate protection for railway premises and goods in transit. Each of the four railway companies made its own arrangements for training before 1939. Frequently, however, recruits learnt more by actual experience than from the courses they attended at civil police schools, and in July, 1946, premises were purchased at Tadworth, Surrey, for establishing a school specialising in the training of railway police. Although these premises have been used for some time, their formal opening was delayed until this month. The new school is described elsewhere in this issue.

* * * *

Schools-on-Wheels

As long ago as 1928 the former L.N.E.R. placed in service an instructional coach for training locomotive men. Recently, two more instructional units have made their appearance on British Railways and have begun an extensive tour of the motive power depots of the London Midland and the Scottish Regions. Each unit comprises two twelve-wheel coaches which have been converted to their new purpose at the L.M.R. works at Derby. The chief object of these instruction coaches, which are described and illustrated elsewhere in this issue, is to train staff in the most efficient methods of driving and locomotive maintenance with a view to cutting down the coal bill. The various illustrations of the interior of the coaches show that much ingenuity has been displayed in arranging the equipment in somewhat narrow confines. One coach includes a cinema, together with accommodation for a travelling lecturer, and the other contains a selection of working models and sections of components. Steam supply for the models is obtained from a small oil-fired stationary boiler.

* * * *

Narrow-Gauge Locomotives for Turkey

Some very light 0-4-0 saddle tank locomotives of an interesting design recently have been completed by W. G. Bagnall Limited at the Castle Engine Works, Stafford. These engines, which are built for a gauge of 1 ft. 11½ in., have been constructed for the British Geco Engineering Co. Ltd. for use in Turkey. The cylinders are only 4½ in. dia. by 7½ in. stroke, and the total weight in working order is about 4¼ tons. Nevertheless, these diminutive machines are intended for loads up to 85 tons on the level. An unusual type of radial valve gear is fitted which was designed by the manufacturers. The most exacting conditions governing the design were probably those relating to the firebox, in view of the type of fuel to be used. This is a mixture consisting of equal parts of "washed" and "tailings," and containing about 60 per cent. of particles ranging from 0 to 0·1 mm. in size, with about 40 per cent. ranging from 1 to 10 mm. The average ash content is 25 per cent. The grate, which has an area of only 2·6 sq. ft., is provided with specially arranged firebars, and a mild-steel hopper ashpan of the self-dumping type is fitted. This is worked by levers on the footplate and enables the ash to be disposed of *en route*.

State Transport's First Year

THE first year of nationalised transport has brought the travelling public and the traders nothing more than they would have received had the British railway companies continued to function. Progress has been made in restoring pre-war train services, seat reservation has been considerably increased, and a number of whole-day and half-day cheap-ticket facilities restored. There are more restaurant-car and buffet-car services. The number of serious railway accidents has been about average. There is nothing to be proud of or ashamed of in this record.

To all outward appearances the railways have continued to function in much the same way as they did under company ownership. The only sign of change has been the appearance of "British Railways" in new paint on locomotives and rolling stock and in various emblematic forms on stations, posters, stationery, and so forth. The Railway, London Transport, and Docks & Inland Waterways Executives started functioning at the beginning of the year, and since then the Hotels Executive and Road Transport Executive have come into being.

Changes of which the public has been only obliquely aware have been the transfer of railway docks (apart from packet ports) and inland waterways, and railway hotels and catering services to their respective Executives. The Road Transport Executive has been taking over the long-distance road hauliers and such goods road services as were controlled by the main-line companies. In these instances the public has so far received much the same service at the same charge, and the change in name has been the only visible difference.

Except for the opening of the East and West extensions of the Central Line of the London Transport Executive and the Rugby Locomotive Testing Station, both pre-nationalisation schemes, and the transfer of the Cheshire Lines system to the London Midland Region; the London Tilbury & Southend system from the London Midland to the Eastern Region; and some central and South Wales lines from the London Midland to the Western Region, there have been no changes of any public interest since the six Regions came into being on January 1 last.

Much of the time of the Executives has been devoted to selecting and setting up their staffs and organisations. They are mostly housed at the former Hotel Great Central, now known as 222, Marylebone Road, and which cannot have cost much less than £250,000 to equip and furnish. Charts of the organisation of the British Transport Commission and the Railway Executive were published in our issues of June 11, 1948, and March 19, 1948, respectively. Since then steps have been taken to standardise the titles of officers in the Regions. Thus the title of Superintendent-of-the-Line has been abolished on the Western Region and Operating Superintendent substituted. The Motive Power organisation has been standardised and given full departmental status on all Regions. A standardised Mechanical & Electrical Engineering organisation has also been instituted.

Appointments and Staff

There have been several transfers of officers from one Region to another and from one department to another. No doubt these transfers have been made in conformity with the civil service tradition that any member of the administrative grade is qualified to take on any job and be moved from one Government department to another without having previous experience of that department—from the Post Office to the Ministry of Transport, from the Board of Trade to the Treasury or the Home Office, and so on. How this theory will work out in the transport service time will show. We understand, too, an underlying idea is to break down regional mindedness.

In place of the routine inspection tours by railway directors and chief officers, which were considered private business and never publicised, the Commission and Executive have made a number of progresses through the Regions, with much hand-shaking, duly recorded by the attendant photographers, followed by speeches. When it becomes known that, owing to falling receipts, some 25,000 railway men and women may have to be dismissed in the near future these progresses are likely to become less popular.

We cannot find any solid foundation for the statements that nationalisation has improved the *esprit de corps* of the Commission's staffs. One of the most interesting features of State ownership has been the reaction of the National Union of Railwaymen. Disappointment and disillusionment have been expressed. The establishment of the British Transport Joint Consultative Council has recently been announced, which is to have trade union representation with the five Executives; but this is very far from achieving "workers' control." Recent strikes at Stratford, Waterloo, Euston, and Southampton, coupled with the N.U.R.'s claim for a further advance in wages, show conclusively that nationalisation has not changed the mentality of the majority of railwaymen and transport workers in the wages grades.

When we turn to the higher grades in the Commission's service we have noticed with regret that quite a number of the occupants of responsible posts appear to have lost their former gusto for the day's work. They plod along conscientiously, but a feeling of frustration has come over them and the old zest they felt for the fray has gone. This phase may be temporary; but it would be idle to ignore the loss of enthusiasm which has come about in some quarters. It is to be hoped it will not be engendered still further by too low a ceiling for the ultimate salaries of those with ambition or a cheeseparing policy of little pinpricks by the withdrawal or reduction of old-established perquisites and privileges.

Road Transport

The Road Transport Executive has not got into its full stride; but has made a bad start by adopting a divisional organisation which does not march with the railway regions and seems to ignore the normal stream of traffic. When road and rail services are really integrated, surely the road and rail regions should not overlap each other! It has, too, followed an early prank of the Railway Executive in spending time on a triviality—the colour schemes for vehicles coming under its control. The public doesn't care whether goods are carried in green, red, or blue vehicles provided prompt delivery is effective at a reasonable price. Earlier in the year the P.R.Os got busy with publicising colour schemes for locomotives and rolling stock for "the people's own railway," and the public were invited to give their views on the "plum and spilt milk" and other hued trains sent around the railways. But the public did not respond to the extent expected and the matter appears to have dropped into oblivion.

Political appeasement has put many difficulties in the way of the road transport operations of the British Transport Commission. Road hauliers, bus companies, and "C" licence holders have received very different treatment from that of the railway companies. Part IV of the Transport Act gives permissive, but not compulsory, powers for the acquisition of any bus undertaking. Many bus systems in and around provincial towns are owned by the municipalities. The Government got cold feet when drafting provisions for dealing with the provincial passenger road transport industry, as so many of its supporters felt that public ownership had already been achieved. The B.T.C. shareholdings (acquired from the railway companies) in large provincial bus companies have been increased by the recent purchase of the Tilling group holdings.

Must Transport Pay?

In our view a most disquieting feature of the Transport Act is the edict laid down that the Transport Commission must pay its way, taking one year with another. Recent speeches and addresses have revealed much apprehension regarding the first year's deficit. It is even rumoured that the railway companies' "very poor bag of physical assets" may be "written up" in the first balance sheet. Instead of any inspiring plans for the future, we have been warned that "on the railway side fairly severe measures would require to be taken to close down branch lines, and indeed a considerable number of intermediate stations throughout the country." Is it an unfair deduction to suggest that the Transport Commission intends to follow the example of the Post Office? By giving a four times worse service at three times the price compared with 1914 the Post Office is still making an annual profit of £24 millions. In order to reduce railway rates and fares, some of the £500 millions a year now being spent in food subsidies might with much greater advantage to the national interest be diverted to the British Transport Commission.

We think that far too much store is being set on future economies to be effected by standardisation. Long before everything is standardised the standards will be out of date. Let the regional engineers and operating officers experiment and work out their own salvation. We do not agree with one sentence in Sir Eustace Missenden's "Christmas and New Year's Message"—"For every job there is a best way of doing it." Usually there are several ways, each with certain advantages and drawbacks according to the nature of the traffic or the work to be done by a machine.

Regional Transport Managers?

There was one very significant sentence in Sir Cyril Hurcomb's recent paper read before the Institute of Transport—"It may have seemed . . . that this problem of integration is not made easier by the Act itself which establishes separate Executives to operate road, rail, and water transport." He then explained that the initial tasks of welding together the separate units which have hitherto operated road and rail transport are sufficient reason for separate Executives. But the Commission itself is the body charged with seeing transport as a whole. In conjunction with the Executive concerned, the Commission was examining ways and means of co-ordinating the various services. In addition the Commission was reviewing the entire charging systems now applying in inland transport as a preliminary to preparing the Charges Schemes called for in Section 76 of the Act. Does not this indicate, when the welding together of the separate units is accomplished, the possibility of the present Executives being abolished and in their stead the appointment of Chief Regional Transport Officers working directly under the Transport Commission?

A year is, of course, too short a time on which to frame definite conclusions about the great upheaval caused by the Transport Act of 1947. We are bound to say our present impressions are not favourable. But the die has been cast and we can only hope for the best. The Commission and the Executives are all working under great disabilities by the embargo on capital expenditure. This limits the potentialities of unification that might be effected by marshalling yards and depots in new locations, extension of electrification, and many other schemes.

We hope to continue to watch with interest developments in 1949 and to avoid any criticism that might seem to savour of prejudice against the new régime. One noticeable trait of members of the Executives and their officers has been their resentment of any criticism, even constructive criticism. Such touchiness is usually a symptom of "inferiority complex."

* * * *

Sir James Milne's Report on Irish Transport

AT the beginning of July last Sir James Milne, formerly General Manager of the Great Western Railway, was asked by the Irish Government to make a report on the steps necessary to secure co-ordination of transport in Eire, the restoration of the financial position of the public transport companies, and the most efficient and economical transport system. A summary of the principal points of Sir James Milne's report is given elsewhere in this issue. A scheme is outlined under which ultimately the net revenue of Coras Iompair Eireann might be expected to increase sufficiently to pay the maximum dividend on the common stock.

One of the most interesting recommendations is that a Central Highways Authority should be established for the maintenance and improvement of the highway system. Partly to equalise conditions between the various forms of transport, Sir James Milne recommends that all forms of transport should contribute towards the cost of highways upkeep. Contribution by road motor transport would be paid by way of licence duties and petrol tax as at present. That payable by railways and canals would be based on their gross receipts in the proportion which the licence duty and petrol tax, payable by public undertakings operating road services, bears to the gross receipts from those services.

When the recent Transport Act was passed in this country the opportunity of taking steps similar to those suggested by Sir James Milne was missed, largely because of the predominating influence of politics rather than practical transport knowledge and experience which went to the drafting of that measure. The result of the omission to make some such provision for equalising road and rail track costs must be an embarrassment to the British Transport Commission at the present time when the differences in road and rail charges are prominently before it.

The report also suggests the reconstruction of the board of Coras Iompair Eireann and a very stringent pruning of capital expenditure on the Irish railways, including the cancellation of the large main-line diesel-electric locomotives, the use of which in Ireland is considered unwarranted. It recommends a more frequent and rapid service with lighter trains for Irish requirements and states that there appears to be considerable scope for the use of diesel railcars.

The position of the Great Northern Railway (Ireland) which has had difficulties peculiar to itself and in which a great deal of interest has been taken because of its operation in both Northern and Southern Ireland is the subject of a special scheme for ownership and operation. Under this, it is suggested, the Great Northern would continue to be responsible for the operation of rail and road services, but ownership of the fixed assets of the company would be taken over by Coras Iompair Eireann or the Ulster Transport Authority, according to which side of the border they were situated.

The report has not yet been the subject of any comment by the Irish Government and no indication has been given as to whether it is proposed to implement it, either in whole or in part. Obviously, much of the report may be controversial in Eire, particularly perhaps those sections which call for increased licence duties and wage cuts. Local loyalties will be pleased by Sir James Milne's recommendation that closure of branch lines should be subject to a public inquiry.

* * * *

Inverness Direct Line Jubilee

THE fiftieth anniversary of the completion of the direct line from Aviemore to Inverness, *via* Carr Bridge, which occurred on November 1, recalls the earlier stages in the establishment of railway communication between Inverness and the South. Plans for a line across the Grampians were prepared in 1845, as an alternative to the circuitous route *via* Aberdeen, proposed by the Great North of Scotland Railway, but strong objection was taken to the long and steep gradients, and the Bill was rejected. Serious financial difficulties prevented the Great North of Scotland Railway from completing its line to Inverness, and the railway west of Keith passed into the hands of the Inverness & Aberdeen Junction Railway.

Connections at Aberdeen, between the Great North of Scotland Railway and the Scottish North Eastern Railway, were so awkward, and so badly arranged, that there was a strong agitation for a shorter and more convenient route from Inverness to the South. The Inverness & Perth Junction Railway was authorised in 1861, from Forres to a junction with the Perth & Dunkeld Railway, at Dunkeld, and opened in sections during 1863. In 1865, the two Inverness companies were amalgamated as the Highland Railway.

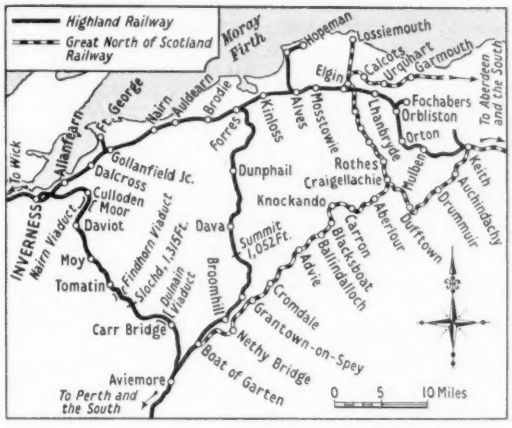
The railway through the Central Highlands was single track, and crossed two summits of well over 1,000 ft., but it afforded a route of 144 miles between Inverness and Perth, compared with 198 miles *via* Aberdeen.

In the early 1880s, schemes for alternative routes from Inverness to the South were put forward by a subsidiary of the North British Railway, and by the Great North of Scotland Railway. Faced with this threat of competition, the Highland Railway obtained powers, in 1884, for a line from Aviemore to Inverness, which made the distances from Perth to Inverness equal to that by the old coach road—118 miles. The construction of this line proceeded slowly, and the railway was opened in sections between July, 1892, and November, 1898.

The engineering works were expensive, and included long and high viaducts over the rivers Findhorn and Nairn, and several earthworks. At Slochd Summit, the railway reached a height of 1,315 ft. above sea-level, and the ruling gradient of 1 in 60 occurred for several miles. The 11 miles from Inverness to Daviot were double track, but the remainder of

the line was single, with passing loops at the stations, and at Slochd Summit.

For several years before the opening of the new line, the fastest trains between Inverness and Perth had been allowed four hours, with six intermediate stops. In November, 1898, the principal services were diverted *via* Carr Bridge, and the journey was shortened by about an hour. The best time



The original and shortened routes to Inverness

was made by the morning mail train from Perth, which was allowed 3¼ hours, with three stops. Later, a morning train from Inverness was booked in 9 minutes less, with three stops, but within a few years these schedules (and others) had been eased.

The reluctance of a comparatively small company, such as the Highland Railway, to undertake the construction of nearly 35 miles of costly and steeply-graded railway through a wild and sparsely-inhabited district, and to suffer a substantial reduction in long-distance fares when the works were completed, can be appreciated. On the other hand, the route *via* Forres was far from direct, and the construction of a shortened line could be advanced as evidence of good faith in the face of a renewed threat of competition.

Quite apart from any question of policy in the past, the enduring value of a shortened route to Inverness lies in its stimulating effect on the tourist traffic, an important item in the precarious economy of the Northern Highlands. This traffic has increased during the present century, although the potentialities of the districts north of Inverness have never been exploited fully.

* * * *

Some Railway Centenaries of 1949

HOW completely the "railway mania" had collapsed by 1849 was demonstrated by the disappearance from the political scene of George Hudson, who had fallen from his high estate as the "Railway King." His resignation from the chairmanship of one company after another, and the frigid reception of his attempt to justify his stewardship in Parliament, had ended his reign for ever, and from 1849 he resided mainly abroad, attempting vainly to repeat his English successes in Continental finance.

The railway openings of the year gave similar evidence of being within the aftermath of the "railway mania." The mileage opened in Great Britain was about 698 (apart from 113 in Ireland), and thus was not inconsiderable, but it represented mainly the completion of works well in hand; never again was the 1848 figure of 1,253 new miles to be approached. None of the openings was of outstanding importance, but the list includes the Manchester, South Junction & Altrincham Railway; the whole of the Reading, Guildford & Reigate Railway; the high-level bridge at Newcastle; and important stations in Glasgow and Perth. Some of the principal openings in the first half of the year are recorded in our "Scrap Heap" columns.

The year was one of great activity for Robert Stephenson. On January 2 the second tube of the Conway Bridge was laid in position; the first tube of the Britannia Bridge over the Menai Strait was fixed on June 20; and on September 28, Queen Victoria paused on his recently-completed High Level Bridge at Newcastle "to survey the wonderful scene below." Incidentally, the last arch of the Aire viaduct of the Leeds & Thirsk Railway was completed on March 23. There was a bridge disaster in the South when, on August 12, the London & South Western line between Datchet and Windsor was about to be opened, for one of the tubes of the bridge across the Thames (which had been constructed on the principle invented by Laurence Holker Potts) subsided. The only serious railway accident of the year was at Carlisle (on the Caledonian) on February 10, when five deaths resulted from the breaking of a carriage axle.

Queen Victoria made many royal excursions by train in 1849, and paid her first visit to Ireland. A contemporary account describes how a special train left Kingstown on August 6 for Sandymount Station, whence the royal party entered the city in a triumphal procession. Before the centenary of the event, Eire will have severed her last link with the Crown. Another celebrity who spent a good deal of his time on the railways in 1849 was Charles Dickens, then writing *David Copperfield*. One of these journeys provided an extraordinary series of meetings with various acquaintances. A letter he wrote that summer records: "On the Portsmouth railway coming here" (from the Isle of Wight to Broadstairs) "encountered Kenyon. On the ditto ditto at Reigate, encountered young Dilke, and took him in tow to Canterbury. On the ditto ditto at ditto (meaning Reigate) encountered Fox, M.P. for Oldham, and his daughter, all within an hour!"

The Railway Passengers' Assurance Company was founded in 1849. The contract for the Indian Peninsula Railway was placed: and the great Dalhousie (who did so much to develop India's railway system) annexed the Punjab to the Empire, after the Sikh War. William Henry Barlow took out a patent for the saddleback form of rail named after him. That great railway administrator, (Sir) George Findlay, was employed in the construction of the Harecastle tunnel on the North Staffordshire Railway—and became later in the year assistant engineer in the construction of the Walton (or Sutton) tunnel on the Birkenhead, Lancashire & Cheshire Railway. Also, (Sir) Allen Lanyon Sarle entered the service of the London, Brighton & South Coast Railway, of which he became General Manager. An interesting pioneer development in 1849 was that the North British Railway Company built a train-ferry to convey wagons across the Firth of Forth from Granton to Burntisland.

So numerous are those associated with railways—either directly or indirectly—who were born in 1849, that only brief mention can be made of a few. Among politicians, the most interesting name is that of Lord Randolph Churchill (February 13), father of Winston Churchill. Lord Randolph's maiden speech dealt with railways, and the subject was the proposal to establish Great Western Railway works at Oxford; when he was Secretary for India, he carried through the proposal to construct the Indian Midland Railway. Another politician was John Gordon Swift MacNeill (March 11); in March, 1892, Lord Salisbury's Unionist administration was defeated on a motion of MacNeill's that the votes of directors of the Mombasa Railway should be disallowed. A famous Continental politician born in 1849 was Count Witte, the Tsarist administrator who entered the railway service in 1877 and, as Minister of Finance, doubled the mileage of Russian railways. Sir Aston Webb, the famous architect (May 22), designed the offices of the Grand Trunk Railway of Canada in Cockspur Street. Perhaps the most outstanding overseas name among the celebrities born in 1849, is that of a Canadian. Sir William Mackenzie (October 30) was one of the greatest of the railway builders of the North American Continent. He was President of the Canadian Northern Railway, and played a great part in the development of the Dominion's railway system.

Sir Robert William Perks, who was born on April 24, 1849, will be remembered by a large circle. In South America he constructed the Transandine Railway between Chile and Argentina, and in the North built railways in Oregon. He will be recalled in this country as Chairman of the Metropolitan District Railway, from 1902 to 1906, and as the founder (with Charles Tyson Yerkes) of the great "Underground" group

which Lord Ashfield developed into London Transport. The name of Sir Robert Perks recalls that of Sir Clifton Robinson (January 1), the electric tramway pioneer, who was a Director of the Metropolitan District, and was actively concerned in the promotion of London's tube system. He was responsible (in 1906) for the system of through booking between electric tramways and underground railways in London. William Towle, the Manager of the Midland Railway Hotels, was also born in 1849. Sir Marc Isambard Brunel, the famous engineer, whose outstanding work was the Thames Tunnel, died on December 12, 1849.

* * * *

George Stephenson and Railway Regulations

GEORGE STEPHENSON'S sturdy individualism is well known, and indeed his successful career, as made known so widely by the writings of Dr. Samuel Smiles, is treated as representative of the best of what could be achieved by "self help" with a minimum of government interference in the first half of the 19th century, when industrialisation was in its formative stages in this country. It is far less well recognised that, in the later stages of his life, Stephenson showed the natural tendency towards greater conservatism, when he became a wealthy man with important interests to conserve. The somewhat perfunctory research undertaken in connection with the centenary of his death last August, revealed the relative paucity of information concerning the later years of his life in contrast with the wealth of intimate detail that is known concerning his early struggles.

It was, therefore, with particular interest that we received recently, through the courtesy of Lt.-Colonel Sir Alan Mount, Chief Inspecting Officer for Railways, Ministry of Transport, a photostat copy of an original letter by George Stephenson dated March 31, 1841, which has been found recently in the Ministry archives. A portion of this letter is reproduced in facsimile, and the full text set out in our "Scrap Heap" page this week, as Stephenson's observations on the regulation of railways by the Government are of historical value. As Stephenson himself says therein, he "ought to be the last man to admit that some interference on the part of the Government is much wanted," but he nevertheless concludes that Government regulation in the interests of safety is desirable. The position at the time he wrote was when the first Regulation of Railways Act had been passed in 1840, authorising the Board of Trade to call for returns of traffic, and of all accidents attended with personal injury, and also authorising the appointment of Inspecting Officers of Railways. The first officers were drawn from the Corps of Royal Engineers (as indeed have been their successors to the present day) and comprised Lt.-Colonel Sir J. M. Frederick Smith, Lt.-Colonel R. Thomson, and Captain S. C. Melhuish. They found speedily that the Act of 1840 did not give them sufficient powers, and the Board of Trade proceeded to draft another Bill, in connection with which the letter from Stephenson doubtless was written. The story of railway inspection in this country was outlined in our columns in 1940 on the occasion of the centenary of the first Act, and this is available in amplified form, price 1s., in the brochure entitled "Railway Inspection."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

A Plea for More Standardisation

28, Elm Park Avenue,
London, N.15. November 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I think British Railways should enforce standardisation more closely. Surely the Fairburn 2-6-4 tanks are the best design for semi-fast passenger tanks? For availability, flexibility, short wheelbase and reasonable axle-loads combined with power, they are superior to the "L1" and "41XX" now building. The "L1" must be terribly hard on second-class tracks at 60 m.p.h. with 5 ft. 2 in. wheels carrying 20-ton axleloads. It may be difficult to decide on mixed-traffic 4-6-0s and 2-8-0 goods, but not on the semi-fast tanks.

The Eastern Region also intends to re-introduce the 50-year-old "J72" class. Surely one of the existing Western Region small 0-6-0 tanks would do, or the "J69" class, whose usefulness has been proved throughout the ex-L.N.E.R.

In view of the generous loading gauge of the Great Northern Railway (Ireland), the heating surface and grate area of the new Class "VS" 4-4-0s might have been larger, possibly allowing larger cylinders.

Is it too much to hope for that the results of the recently-made exchanges be made public? After all, the railways do belong to us now.

Yours faithfully,
F. JONES

"Post Office Red" and "Southern Green"

74, Cassiobury Drive,
Watford, Herts. November 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have only just read your editorial comment in the November 12 issue headed "Post Office Red" and "Southern Green."

It is most heartening to find genuine enthusiasm expressed over the choice of suitable colours for British Railways rolling stock. But so much has been written already in the editorial and correspondence columns that the subject has become a little hackneyed. Those of us who realise that each enthusiast will have, and retain, his own opinion, have ceased to worry about putting over our own ideal and, with fingers crossed, now await the decision of the Executive.

Meanwhile, editorial comments keep popping up in praise of Post Office Red for "our" locomotives—and now it has been combined with Southern Green for coaches. Heaven forbid.

Should such a colour scheme be adopted, many of your readers would be most unhappy to think that their editor might have been to blame, even indirectly, for influencing the choice of the Executive; which, judging from your paragraph, is what you would like to do.

It would seem ridiculous if I wrote to you each time you mentioned your choice, in an effort to keep my own in the minds of official readers. Perhaps we could let the subject rest and hope that the Executive will choose colours which are the least offending to the greatest number of those interested.

At the same time may I say how much your editorial comment and lead are appreciated in the more technical subjects? There, most of us gladly bow to long experience. But in cases of personal taste such as this I feel that moderation of editorial opinion would be more acceptable.

Your otherwise very satisfied reader,

A. N. WOLSTENHOLME

Closing of Branch Lines

"Thurstaston," 22, Heatherfield Road,
Marsh, Huddersfield. November 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent, Kenneth F. Browne, writing on "Rail and Road Fares" in your November 26 issue, makes certain points with regard to minor railway services which crystallise my own misgivings about current tendencies. The proposals of the Transport Commission appear to suggest a mass approach to the road-rail issue without regard to whatever merits individual lines may possess.

I find that this is often the feeling of the actual staffs of the threatened branch lines who believe that their railways are being closed by remote decisions without the opportunity of proving their merit with competitive fares and imaginative services.

Four thoughts are in my mind:—

(*a*) Do the railway authorities intend to test local feeling before deciding to withdraw a railway service? With the proviso of equal fares, this feeling may be different from the present.

(*b*) Severe weather conditions in recent times have given these lines a new, if temporary, value. Is this considered before closure is decided on?

(*c*) Could certain rural lines be re-assessed as "light railways," thus permitting a new fare rate distinct from main lines?

(*d*) Many of the rural lines are scenic gems and are greatly valued by certain serious students of railway antiquity. Could publicity be used to develop public appreciation of this angle?

After all, the staffs of the rural branch lines have proved their enthusiasm, through the station gardens competitions, and it may

be contended that they deserve something better than the psychological discouragement of handling perpetual empty trains or the final defeat of closure. All branch line terminals or intermediate stations are not remote from their communities and require only cheap fares and convenient services to thrive again.

Yours faithfully,
WILLIAM B. STOCKS

More Attractive Services

The Old Manor,
Salisbury,
Wilts. December 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Both Mr. Roberts (with whom, for once, I agree) on railway fares, and Mr. Livingston, on the closing of branch lines, in your December 10 issue, are correct.

As the road services are, in general, vastly superior to those provided by rail, and roughly half the price, the railways have lost both the traffic and the goodwill of the public.

Unless and until the railways provide a more attractive service, they will find themselves in growing disfavour. As things are, there are numbers of people who do not use a train if it possibly can be avoided. There are stations and lines that it is practically impossible to use, however much anyone might want to.

The railways are rapidly joining the canals; both could be revived to the advantage of the country as a whole.

Yours faithfully,
COURTENAY BARRY

Articulated Locomotives

220, Edgewarebury Lane,
Edgware, Middlesex.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Livesay's letter in your issue of November 12, referring to mine of August 6 on "The Paget Locomotive and After," asks me to submit for publication an outline design of the locomotive suggested in my letter. This locomotive is a modification based on a design which I have prepared in considerable detail and which was briefly outlined in a letter to *The Engineer* of August 6, being a contribution to a discussion arising out of Mr. Livesay's article in that journal on "Train Service Comparisons."

I should like, however, to comply with Mr. Livesay's request and enclose a diagram for publication accordingly. It illustrates a locomotive of exceptional power within the dimensional limits of the average British loading gauge (see "The Locomotive Engineer's Pocket Book," 39th Edition, p. 9). Although this design incorporates a proposed heat recovery system, it could, with increased boiler capacity, be applied equally well to a normal locomotive, and if oil firing cannot be accepted, mechanical stoking would be necessary. To save letterpress I have appended the leading dimensions and particulars to the diagram.

Mr. Livesay mentions earlier steam tender designs. There is obviously some similarity in principle, and I do not claim to be original in this direction, but rather to have endeavoured to build up the idea on modern lines to a reasonable conclusion. The design seeks to demonstrate how a locomotive comparable in power with transatlantic types is possible for British Railways, without resorting to the existing well-known types of articulated locomotive mentioned by Mr. Livesay.

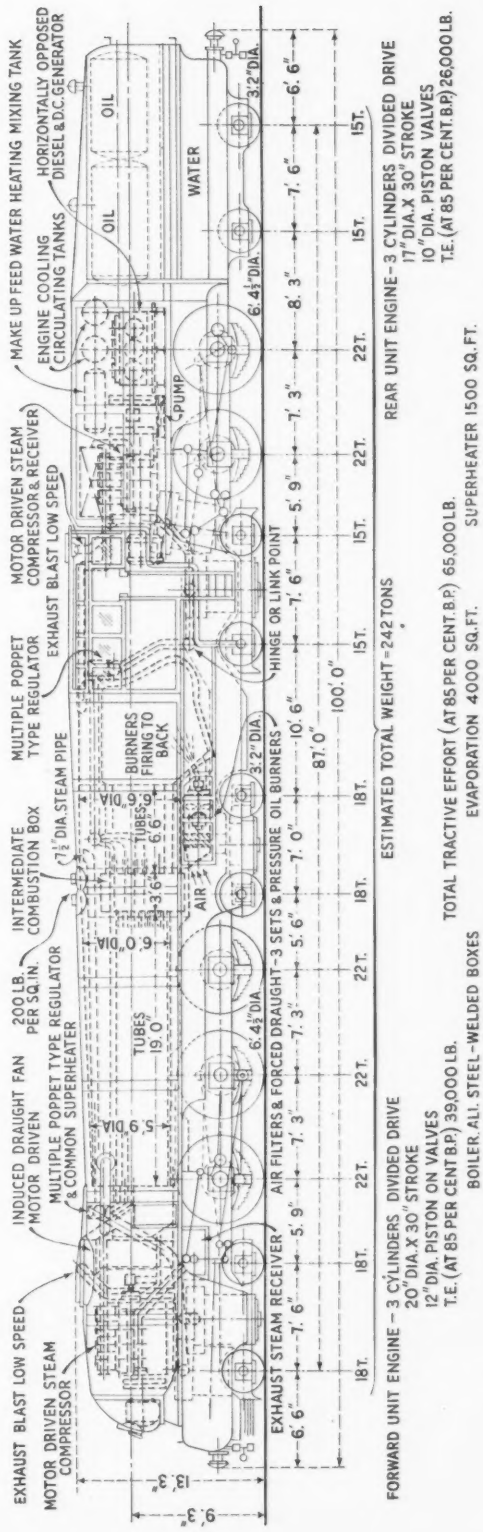
Whilst I agree with all he has to say about the Beyer-Garratt machines and also would like to see them more extensively employed on our railways, I maintain that it would be equally possible to construct a successful locomotive having two linked power units served by a single boiler in the orthodox manner, thus avoiding the more complex arrangement of two power-bogies at the extremities, with the boiler suspended between on cradle frames in the form of a bridge.

I am at one with Mr. Livesay in his love of the "basic design" and his feeling that we have probably reached the ultimate in steam locomotive design. Still more do I support his plea for more imaginative effort on the part of locomotive designers, to follow the magnificent lead given by Mr. O. V. S. Bulleid.

In setting down my ideas on paper I have hoped to stimulate interest in the subject of the future of the steam locomotive, and provide some material for the development of a useful discussion.

If Mr. Livesay would care to have further information I should be most happy to send him the more detailed drawings and description on which the diagram is based.

Yours faithfully,
E. W. HERRINGTON


EXHAUST BLAST LOW SPEED
MOTOR DRIVEN STEAM COMPRESSOR
INDUCED DRAUGHT FAN MOTOR DRIVEN
MULTIPLE POPPET TYPE REGULATOR & COMMON SUPERHEATER
200 LB. PER SQ.IN.
INTERMEDIATE COMBUSTION BOX
7½" DIA. STEAM PIPE
MULTIPLE POPPET TYPE REGULATOR
EXHAUST BLAST LOW SPEED
MOTOR DRIVEN STEAM COMPRESSOR & RECEIVER
MAKE UP FEED WATER HEATING MIXING TANK
ENGINE COOLING CIRCULATING TANKS
HORIZONTALLY OPPOSED DIESEL & D.C. GENERATOR
OIL
OIL
WATER
PUMP
BURNERS FIRING TO BACK
TUBES 19.0
TUBES 3.36" – 6.6"
AIR
6.4½" DIA
6.4½" DIA
3.2" DIA.
3.2" DIA.
HINGE OR LINK POINT
EXHAUST STEAM RECEIVER
AIR FILTERS & FORCED DRAUGHT – 3 SETS & PRESSURE OIL BURNERS
ESTIMATED TOTAL WEIGHT = 242 TONS
FORWARD UNIT ENGINE – 3 CYLINDERS DIVIDED DRIVE
20" DIA. X 30" STROKE
12" DIA. PISTON ON VALVES
T.E. (AT 85 PER CENT B.P.) 39,000 LB.
BOILER. ALL STEEL – WELDED BOXES
TOTAL TRACTIVE EFFORT (AT 85 PER CENT. B.P.) 65,000 LB.
EVAPORATION 4000 SQ.FT.
REAR UNIT ENGINE – 3 CYLINDERS DIVIDED DRIVE
17" DIA. X 30" STROKE
10" DIA. PISTON VALVES
T.E. (AT 85 PER CENT. B.P.) 26,000 LB.
SUPERHEATER 1500 SQ.FT.
100'0"
87'0"
13'3"
9'3"

Outline design for a high-power articulated steam locomotive

The Scrap Heap

SOME RAILWAY CENTENARIES OF 1949

February 1, Burnley to Colne opened (6 miles). East Lancashire Railway.

February 12, Sheffield to Beighton Junction (Midland) opened (6¾ miles). Manchester, Sheffield & Lincolnshire Railway.

March 1, Perth (Barnhill) to General Station opened (1 mile). Dundee & Perth Railway.

March 30, Dereham to Fakenham opened (12¼ miles). Norfolk Railway.

April 2, Laira to Plymouth (Millbay) opened (2¾ miles). South Devon Railway.

April 2, Brigg to Gainsborough opened (16½ miles). Manchester, Sheffield & Lincolnshire Railway.

April 2, Lostock Hall Junction to Walton Junction (Liverpool) opened (22¾ miles). East Lancashire Railway.

April 9, Lincoln to Gainsborough opened (16 miles). Great Northern Railway.

May 14, Branches from Polegate to Eastbourne and Hailsham opened (7 miles). London, Brighton & South Coast Railway.

June 1, Wellington to Stafford opened (18 miles). Shropshire Union Railway.

June 1, Wellington to Oakengates opened (2½ miles). Shrewsbury & Birmingham Railway.

June 2, Motherwell to new Glasgow terminus at South Side opened (11¾ miles). Caledonian Railway.

June 18, Congleton to Macclesfield opened (8¼ miles). North Staffordshire Railway.

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *Dec.* 30, 1848

OUR readers are perhaps aware that a society has been projected under the title of "the British Railway Association, for the purpose of providing for the families of railway secretaries; for the prevention of accidents on railways; for indemnifying railway travellers more adequately, and for mitigating the losses sustained by Railway Companies from fire and railway accidents."

The objects of the Association are highly laudable; but in the present stage of the undertaking we deem it advisable to do no more than express our best wishes for its success. We have seen so much of the modification to which prospectuses are exposed, that we feel the safest course to be to defer any extended examination of the claims to support put forward by this Company until another occasion. We shall be happy to learn the favourable result of the adjourned meeting, to be held this day, to which the leading members of the railway world are invited To "the general benefit fund" we accord our earnest wishes of success. The formation of that alone would entitle the promoters to the thanks of all artizans engaged in every department of the railway operations

* * *

During a meeting of the House of Commons Standing Committee on the Iron & Steel Bill, on December 16, Mr. Mikardo (Reading—Lab.) said he calculated that, with members speaking at 160 words a minute, 600.000 words would have been spoken on the Bill by the time the Committee had finished its 36 sittings. That was equivalent to the Books of Genesis, Exodus, Leviticus, Deuteronomy, Joshua, Judges, Numbers, and Samuel (two books).

GEORGE STEPHENSON AND THE BOARD OF TRADE

The following is the text of an original letter by George Stephenson, dated March 31, 1841 (of which a portion is reproduced below in facsimile) that has been found recently in the Ministry of Transport archives, and kindly placed at our disposal by Lt.-Colonel Sir Alan Mount (see editorial article on page 742).

To the Right Honble H. Labouchere,
President of the Board of Trade.

SIR,—Since my examination before the select committee on Railways I see the difficulties you have to contend with, from the opposing members to your Bill in bringing forward a measure for the management and better regulation of Railways. I am quite sure that some interference on the part of Government is much wanted. Perhaps I ought to be the last man to admit this (the whole system of Railways, and Locomotive Engines having been brought out by my exertions) but when I see so many young Engineers, and such a variety of notions. I am convinced that some system should be laid down, to prevent wild, and visionary schemes, being tried, at the great danger of injury or loss of life to the public. I consider it right that every talented man should be at liberty to make improvements, but that the supposed improvements should be duly considered by proper judges. Then the question follows, from the opponents to the Bill, who are those judges to be? I beg to lay before you my views on this point.

Suppose any Engineer has any improved plan for the better working of Railways to propose, he should submit his plan to the Engineer belonging to the Board of Trade, but before that Engineer should give his decision as to the utility of the scheme, he should have full power to call together the chief Engineers of the principal Railways of the Kingdom, and after the subject has been duly discussed, votes should be taken for and against the measure: the discussion should be laid before the Board of Trade, accompanied with the observations of the government Engineer, and if approved of should be then placed into his hands to carry out.

I should propose for the consideration of the different Engineers that the speed of Locomotives should not exceed forty miles per hour on the most favourable Lines, excepting on special occasions: curved Lines to diminish in velocity according to the radius. I am quite aware that this cannot be carried out to any great nicety, but still it would be a check upon the Drivers. Collateral Lines require government consideration is a very strong point of view.

Uniformity of signals is another desirable point.

As several persons are now turning their attention to the construction of self acting breaks, it will soon appear that great benefit and safety to travelling will be found by their adoption. In the mean time no train should be allowed to travel which has not two breaksmen and four coaches in each train should be provided with breaks to allow for contingencies. It is my opinion that no contrivance can be found out by which the breaks can be dispensed with.

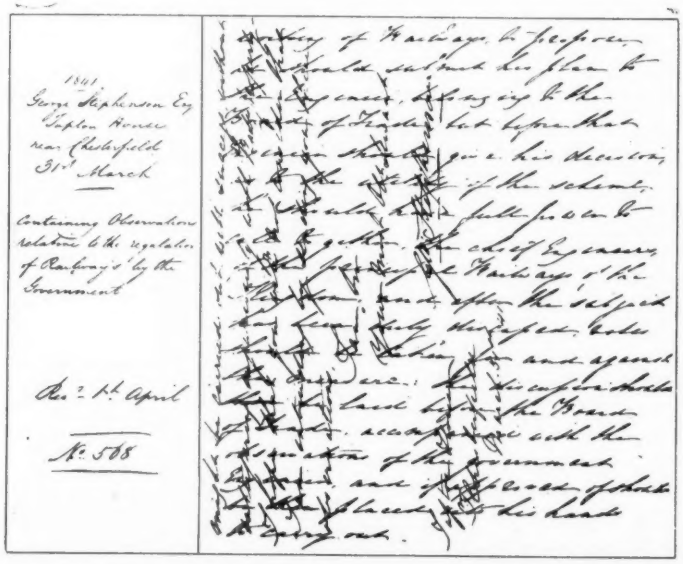
Six wheeled Engines and carriages are much safer and more comfortable to the travellers than four; any person riding one hundred yards upon an engine or coach constructed upon this plan would discover the difference. The rim of all Railway wheels ought to be made the same width, and the axle trees for all coaches of a strength approved of by the Engineers, both wheels, springs, and axles should bear the government stamp, to being made of the best materials, as every practicable means ought to be made use of in order to have these made of the best iron.

All disputes between Railway Companies should be decided by the Board of Trade.

It appears to me that the above suggestions might be carried out with success, without interfering injuriously with Railway property. I hope that you will not consider that I am intruding by sending you these observations.

I am, Sir,
Your Most Obt. Servant,
(*Sgd.*) GEO. STEPHENSON

Tapton House,
nr. Chesterfield.
March 31st, 1841


1841
George Stephenson Esq
Tapton House
near Chesterfield
31st March

Containing Observations
relative to the regulation
of Railways by the
Government

Rec'd 1st April

No 568

Facsimile of portion of George Stephenson letter of 1841 *to the Board of Trade* (*note prompt delivery*)

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Special Transvaal Allowance

In view of the exceptional conditions in certain areas in the Transvaal, the payment of a temporary disability allowance, subject to alteration or withdrawal at any time, is being made to certain railway servants stationed in these areas, backdated to July, 1948, pay month. The allowance, which is limited to a maximum of £60 a year for married servants and £30 a year for unmarried servants, is payable provided the salary or wage plus the allowance does not exceed £660 a year in the case of a married servant or £330 a year for an unmarried servant.

The areas in which the payment of the allowance is made include the Witwatersrand and Pretoria suburban sections, the Rand Mineral Line, Vereeniging, and certain sections in the immediate vicinity of the Witwatersrand and Pretoria.

RHODESIA

Chrome and Coal Targets

The Southern Rhodesia Minister of Mines & Transport has stated that, as a base line target, chrome haulage to Beira and coal haulage to the copper belt are to be built up immediately to 24,000 tons and 39,000 tons respectively. He added that the railways hoped to reach ultimately a monthly target of 32,000 tons of chrome and 50,000 tons of coal.

New Buses

The coachwork of the first of six new railway passenger buses has been completed in the railways' road motor service body-building workshop at Bulawayo. The chassis and engine are British. This is thought to be the first elaborate omnibus body to be built in Rhodesia. The European compartment can accommodate nine passengers and the African compartment 32.

INDIA

Speeding up Claims Settlements

The Central Advisory Council for Railways, which met in Delhi on December 5 under the presidency of Mr. N. Gopalaswami Ayyangar, Minister for Railways & Transport, discussed, among other matters, the methods which railways should adopt to settle compensation claims expeditiously. The new measures, which come into effect from January 1, 1949, include the powers of stationmasters and claims inspectors to settle claims up to Rs.50 at the time of delivery of consignments on certain conditions. In the case of a total loss of a consignment, settlement is to be made after the lapse of a year from the date of booking, whether railway enquiries are complete or not. It is expected that as a result of the new steps proposed, settlement will be speeded up of all claims outstanding for more than six months.

Classes and Refreshment Rooms Re-designated

The Council reversed its previous decision to designate the various classes of travel from January 1, 1949, as upper, inter and ordinary, and instead substituted classes I, II, and III. The Council also decided that the new classes should be marked on coaches in a manner which could be understood by illiterates. The new markings will, therefore, be one, two, and three vertical lines, which will be universally understood in India.

New names for refreshment rooms will be "Vegetarian," "Non-vegetarian," and "Restaurant"; the last will be provided at important junctions, where foreign tourist traffic is likely to pass through. The Council also decided that an all-India timetable should be published both in English and Hindi.

VICTORIA

Conversions and Electrifications

The Government has approved the electrification and conversion to broad gauge of the 2 ft. 6 in. Ferntree Gully-Emerald branch, a scenic line which winds through the Dandenong Ranges east of Melbourne. Land is to be acquired immediately for deviations of the existing line which has gradients as steep as 1 in 30 and sharp curves. The formation of the abandoned extension from Emerald to Gembrook, 1,060 ft. above sea level, will be retained for eventual electrification.

The amount of £7,500 has been allotted for passenger accommodation at Mont Park, terminus of a steeply graded suburban branch, 1¼ miles long, from Macleod, on the Melbourne-Hurstbridge line. The branch is electrically worked, but at present carries goods traffic only.

UNITED STATES

The "Schuylkill"

On November 14 the Reading Company put into service a nine-car train, the "Schuylkill," on an accelerated schedule between Philadelphia, Reading, and Pottsville. It is steam-hauled, and the coaches, which are air-conditioned and have roller-bearing four-wheel bogies, were rebuilt in the railway's workshops.

Increase in Long Island Season Rates

The Long Island Railroad has sought authority to increase temporarily its season ticket rates by 25 per cent. The increase is partly to offset greatly increased operating costs pending a final decision before the New York Public Service Commissioners on season ticket fares.

CANADA

Grain Movements to Winter Ports

The first large-scale movement of grain by the Canadian National to winter ports began on November 25. The initial shipment required 513 freight wagons to carry 826,000 bushels of wheat and 4,400 tons of flour. Fast freight service has been inaugurated by the C.N.R. to Halifax and Saint John, with improved freight handling facilities at those ports.

Future of Ottawa Central Station

In our December 10 issue, it was reported that the Canadian Pacific and Canadian National Railways did not favour the removal of Ottawa Station to the outskirts of the city. It is now announced that they have agreed to co-operate in such a scheme. The funds have to be voted by the Federal Government.

New C.N.R. Coaches

Twenty-five passenger coaches will be built by Canadian Car & Foundry Co. Ltd., for the Canadian National Railways. The value of equipment orders outstanding for the C.N.R. is now $35,500,000, and there is also under way a large modernisation and rehabilitation programme for passenger equipment in the railways' shops.

The new coaches will feature spacious lounges at both ends of each car. Added convenience and comfort is to be provided by alcove seats and full length mirrors. Outlets for electric razors will be installed in the men's lounge, and a vanity dressing table with winged mirror and boudoir seat will be placed in the ladies' lounge. There will be seating for 60 passengers, and the interior of the coach is to be divided into two compartments, smoking and non-smoking; the latter will seat 32. A "Herculite" glass door between the two compartments is being introduced as an innovation in railway car design.

The rubber-cushioned revolving and reclining seats and the footrests will be designed for individual adjustment. The clear vision "picture" windows will be five feet wide, equipped with the latest type blinds operated by finger touch control. Lighting fixtures over each seat will eliminate eye strain by means of new focusing lenses.

A low alloy, high-tensile steel will be used primarily in the construction of these all-welded coaches. Each will be mounted on two six-wheel bogies equipped with anti-friction bearings. Vibration will be minimised by the use of bolster anchors and pads between the journal boxes and equalisers. Canadian National green with gold lettering and numerals will be the external livery.

CHILE

Reopening of Nitrate Plant Served by Taltal Railway

After 15 years out of production the nitrate plant of the Iquique Nitrate Company, known as the Chile Oficina, was reopened recently. It is expected shortly to produce 4,000 tons a month. The plant is served by the Taltal Railway, and it is probable that carriage of equipment to the oficina has helped to produce part of the £46,800 increase in earnings reported for the first half of this year. The last report of the Taltal Railway showed that a gross increase to £50,918 was accompanied by an increase in costs to £76,104. Up to June this year, the £97,790 of gross revenue exceeded 1947 working costs by about £20,000, from which it is hoped a small profit has resulted, and in the first three months of the current year there was a further gross increase reported of £7,345 before the Chile Oficina came into production. In 1929-30 the Taltal Railway carried 160,000 tons of nitrate, as against 33,502 tons in 1946-47.

ARGENTINA

Ferrocarril Patagónico

In our November 5 issue we stated that this system connected with the former B.A.G.S. system. In fact, however, the Patagonian lines remain isolated. It is the broad-gauge (ex-State Railways) line between Patagones and Bariloche which connected with the ex-Buenos Ayres Great Southern and has been combined with that system in the new F.C. General Roca.

Compulsory Life Insurance for Railway Employees

One of the consequences of the acquisition of the Argentine railways by the State is that all employees and workmen are now included in the compulsory life insurance scheme for Government employees. The minimum insurance is 4,000 pesos, and it is left to the option of the employee to take up additional insurance to a maximum of 10,000 pesos, according

to salary. The premium payable is one peso a month per thousand pesos insured, but no employee is obliged to pay more than 5 per mil of his salary for the compulsory insurance. Should this proportion not reach the minimum monthly payment of four pesos, the difference is made up by the State. The risks covered are death and total and permanent incapacity.

Barter Agreement with Poland

Following on the recent barter agreements with Sweden and Hungary, a similar agreement has been signed with Poland, involving the exchange of goods to the value of $150.000.000 U.S. over a period of three years. Argentina will ship produce of different kinds and will receive coal, cement, rails, railway rolling stock and equipment, telephone, telegraph and electrical equipment and other items.

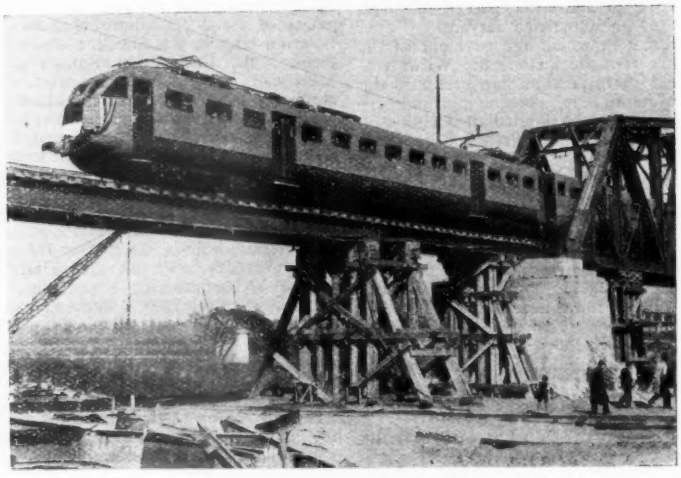
ITALY

Completion of Permanent Bridge near Piacenza

One of the most important of Italy's railway bridges, that carrying the Milan—Rome main line across the Po just north of Piacenza, was rebuilt in permanent form and opened to traffic on August 22. The new bridge, like that which it replaces, is a steel structure and single-track for the present, but the bridge for the second track alongside has been begun. The length of the bridge is 2,505 ft. 11 in., compared with 2,375 ft. 6 in. of the original lattice-work bridge which was damaged by air attacks during the war, and finally destroyed by the retreating Germans in April, 1945. The old structure consisted of two parallel bridges resting on ten common masonry pillars, with eleven separate lattice-work spans for each bridge. The first four spans from the Milan side of the bridge and the first span from the Piacenza side were each 191 ft. 7 in. long and the remaining spans 236 ft. 3 in. each.

In view of the importance of the Milan—Rome main line temporary reconstruction was begun without delay on May 14, 1945, but lack of materials and shortage of labour were serious handicaps. It had been decided that reconstruction should comprise only the western section of the bridge. Wooden trestles, built partly with materials provided by the Germans with the intention of reconstructing the damaged spans to facilitate their flight northward, were erected to replace the destroyed pillars and support the damaged spans; temporary metal spans were provided to replace some of the destroyed spans. It proved possible to lift some of the spans lying in the river, repair them, and place them in position again. The temporary structure was opened to traffic on October 14, 1945. Electric traction was reintroduced from the outset, but the speed restriction imposed on trains crossing the bridge and the single-track working precluded the restoration of a pre-war standard timetable.

It has been announced that once the second section of the bridge has been completed, thus obviating single-track working across the river, high-speed trains to be introduced on the Milan—Rome main line will cover the 392 miles between the two towns in less than six hours, as compared with the present 7 hr. 25 min. of the present high-speed electric railcars stopping *en route* only at Bologna and Florence.



Electric train crossing temporary bridge at Piacenza

Publications Received

Meet the Locomotive. R. Barnard Way. London: Transportation Press Limited, Tudor Chambers, N.22. 6 in. × 4 in. 49 pp. Illustrated. Paper covers. Price 1s. 6d.—The uninitiated will find in this booklet a straightforward and lucid account of the principal components of the steam locomotive—their construction and the part they play in producing its tractive power. The reader's understanding of the subject is facilitated by Mr. Barnard Way's excellent drawings and the author wisely has avoided any detailed expositions in this introductory work.

Civilian War Transport: A Record of the Control of Domestic Traffic Operations by the Office of Defense Transportation, 1941-1946. Washington 25. D.C.: The Superintendent of Documents, U.S. Government Printing Office. 12 in. × 9¼ in. 361 pp. Paper covers. Price $1.75. —The prosaic title and sub-title give slight indication of the range covered by this great document, which is really a monument to the thousands who formed part of the American transport machine during the war, to the winning of which transport made an inestimable contribution. Statistics show how the Office of Defense Transportation successfully handled the burden of rapidly increasing military traffic, although always unable to obtain all the new rolling stock which it required and which was assigned to other uses. The history is a record of remarkable achievement. The chapters are the result of collaboration between the authors, specialists in the particular branch described, and many who were responsible for editing and revising. There are summarised texts of orders and biographical sketches of the leading American war transport officials.

Transport Service Research. R. J. Eaton. London: Transportation Press Limited, Tudor Chambers, N. 22. 7¼ in. × 4¼ in. 20 pp. Paper covers. Illustrated. Price 1s.—Intended particularly for transport students, this booklet is a reprint of a paper given to the London Centre of the Institute of Traffic Administration, by Mr. R. J. Eaton, last May. The fundamentals of transport are dealt with and the author draws attention to two prominent features: the service of transport, and the value of that service. The need for research is shown, with reference to its application in a number of departments, and the conclusion is reached that there is nothing of traffic importance that cannot be tackled by a transport research unit, although mechanical and electrical problems are considered best left to engineering specialists.

Second Year Engineering Science: Mechanical. By G. W. Bird, revised by Struan A. Robertson. Third edition. London: Sir Isaac Pitman & Sons Ltd., 39/41, Parker Street, W.C.2. 5½ in. × 8¾ in. 258 pp. Illustrated. Price 8s. 6d.—This book has been revised and brought up to date to conform with recent changes in the London University engineering examinations and it is specially prepared for the use of students working through the second year syllabus of the National Certificate course. The 21 chapters cover the following aspects of mechanical science: kinetics, velocity, and acceleration; centrifugal and centripetal forces; work and energy; friction; strength of materials; hydraulics; steam plant; the slide valve; steam boilers and boiler mountings; internal combustion engines; engine tests and calculations; properties of steam; thermodynamics of gases; and boiler performance. There are useful steam tables, logarithms, antilogarithms, and tables of trigonometrical functions.

Hints to Business Men Series. London, S.W.1: Board of Trade, Export Promotion Department, Thames House North, Millbank. 7¼ in. × 4¾ in. Paper covers. Issued gratis to representatives of United Kingdom firms travelling overseas on export business.—The countries covered by these booklets include: Belgium and Luxembourg, Brazil, Colombia, Ecuador and Peru, the Central American Republics, and British Dominions and Colonies such as Australia, Canada, Eire, Newfoundland, Kenya, Uganda, and Tanganyika. Information is given relating to climate (in the case of tropical countries), language, hotels, regulations affecting travellers, transport services, currency and exchange, import licences, customs duties, shipping documents, advertising, postal regulations, weights and measures, population, official organisations, general commercial and economic data, and books of interest to visitors.

Rheostatic and Regenerative Braking—5*

Accepting regenerated power at substations with rotary and static rectifying equipment

By B. J. Prigmore, M.A., A.M.I.E.E.

ON many electric suburban railways carrying heavy traffic it is customary to parallel numbers of substations. Should regenerative braking be in use there is in general little likelihood of the net load on the whole system being negative owing to a large number of trains regenerating at the same time. During slack periods, however, the distance through which regenerated power has to be taken before it can be accepted by other trains may be such that appreciable voltage rises are caused near the regenerating trains. In this case it is possible that some of the power would tend to travel back through the substations to the transmission network for passing to the sections from which power is being drawn.

In the limiting case (as when the last few trains at night are operating) there will always be some periods when regeneration exceeds the load demand, and whilst it is possible (if provision is made) to *transfer* energy through the transmission network, it is not possible to take the power any further back in the sequence of its production; it is not possible to regenerate back to the power station, through its turbines, and so to the coal store!

On main lines with infrequent services it will always be necessary to transfer regenerated energy appreciable distances, hence to take it through substations, unless the timetable can be arranged so that trains ascend and descend the same long gradients at the same time.

Reverse-Power Relays

The transformer substations of a.c. installations are most able to accept "reverse power," since a transformer is amongst the most reversible of electrical apparatus. However, in normal practice a faulty transformer is detected because parallel transformers may feed power into it through the substation busbars. For this reason reverse-power relays are fitted to the transformer circuit-breakers to trip them should a fault permitting reverse power occur.

If regenerative braking is to be made use of, and the transformers be expected to receive reverse power, then the reverse-power relays either must be set to operate at high powers or omitted altogether. In either case the reliability of the substation as a whole is decreased.

A similar problem exists in d.c. rotary convertor substations; the reverse current relays, of which the purpose is to prevent parallel convertors feeding current into a faulty one from the d.c. side, must be omitted. Nevertheless, inverted operation of rotary convertors is quite feasible, so, if provision is made for such inversion, regeneration on d.c. systems with rotary convertor substations may be employed readily.

Should the a.c. side of a substation be unreceptive, then the d.c. voltage will rise appreciably if regeneration is attempted. Before this rise becomes excessive, voltage relays usually operate to transfer the connections to a resistance in which the power which cannot be accepted by the a.c. system may be dissipated. The relays and resistances may be on the trains (as on those with metadyne equipments, operated by London Transport), or at the substations.

In normal circumstances mercury-arc rectifier substations cannot be used with regenerative braking, though they are employed on some trolleybus systems, when overvoltage, caused by reverse power, results in the conductor wire connections being transferred to resistances in the substations, in which the excess regenerated power is dissipated. It is possible, however, when more than one rectifier unit is in a substation, to have one of the units connected for inverted operation so that it may transfer power from the d.c. to a.c. sides of the station whilst the other units continue in operation on no-load.

A rectifier can only *conduct* current in one direction: its operation, within itself, is not reversible. "Grid control" and reversal of external connections are necessary before it can be made use of as an invertor.

The action of a mercury-arc rectifier depends on the copious emission of electrons (negatively-charged particles) from the hot-spot (kept hot by the arc) on the surface of a pool of mercury. The stream of electrons is attracted to the most positive of the several electrodes above the mercury pool in the evacuated rectifier bulb. In that the negative stream travels from the pool to the positive electrode, so a conventional electric current is regarded as flowing from the positive electrode, or anode, to the mercury pool, or cathode.

A simple six-phase rectifier, taken for illustrative purposes, is shown in Fig. 10; in practice six-electrode units are often used. The electrodes, *a, b, c, d, e, f,* are successively positive with respect to the neutral point *N* of the transformer secondary windings. Conduction of current occurs from *a* to the mercury, current thus flowing through the train to the d.c. negative and a.c. neutral point *N*. When anode *b* becomes more positive than *a*, it attracts the stream of electrons. The arc thus transfers to *b*, which is now the anode feeding current to the train. Similarly, anode *c* takes over from *b*, *d* from *c*, and so on, the arc acting, in effect, as a switch connecting each anode to the load whenever it (the anode) is more positive to *N* than any other.

Reversed Rectifier Connections

When regeneration occurs, current will be fed from the locomotive to the track conductor; the rectifier current must flow to the mercury pool; so, if regenerated current is to pass through the rectifier, the rectifier connections must be reversed, as shown in Fig. 11. The current will then flow the same way through the rectifier and transformer windings, but the opposite way through the locomotive.

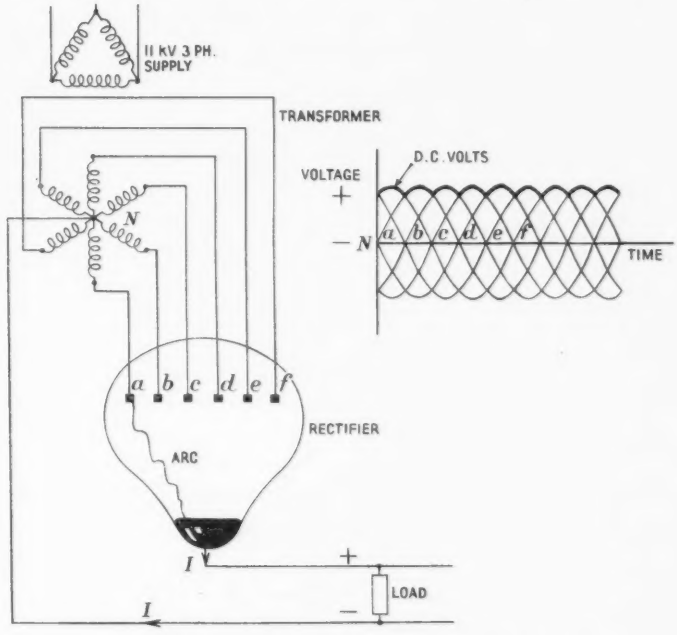


Fig. 10—The simple six-phase rectifier

The anodes *a, b, c,* etc., are of alternating potential to *N*; they are thus successively negative to *N*. With the reversed connections, the mercury cathode is also negative to *N*. Providing the line voltage *V* is greater than the instantaneous value of the voltage of any anode, then, the anode being positive to the cathode, conduction (by attraction of the electron stream) can take place.

The next problem is that of ensuring that each anode conducts *only when it is negative to N*. With this occurring, the regenerating locomotive will in effect be sucking current from successive transformer windings during periods of negative voltage (rather than accepting it during periods of positive voltage), so power will flow from the locomotive to the transformer; *i.e.*, regeneration will take place.

* Previous parts of this article appeared in our issues of April 23, June 18, September 10, and December 3

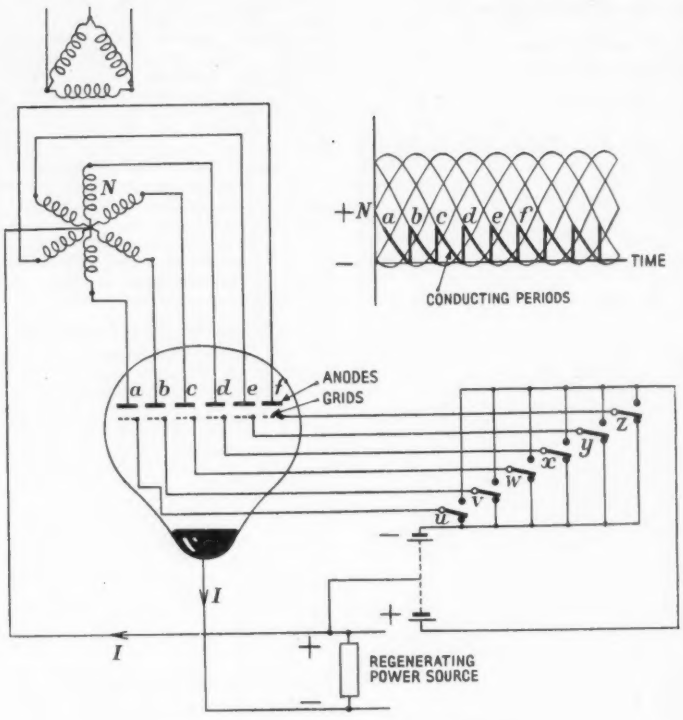


Fig. 11—The simple six-phase invertor

Firing of any anode is inhibited by placing before it a grid of zig-zag strip metal kept negative to the mercury. This negative grid repels the electrons (which are negatively charged) hence prevents the anode from firing. If electrode *a* is firing when it is negative to *N* (though, it is emphasised, positive to the mercury cathode), the other five electrodes, though more positive to the mercury, are prevented from firing by their grids, which are kept negative to the mercury cathode by downward closure of the switches *v, w, x, y, z* (in Fig. 11) which connect the negative biasing battery to the grids.

Before anode *b* becomes more negative than *a* it is desired to transfer the arc to *b*; this is done by lifting switch *v* and giving a positive impulse to the grid of *b*, an impulse of such magnitude that the arc is attracted from *a* to *b*. The anode *a* ceases to fire when it becomes negative to the line, and is prevented from firing again by downwards closure of switch *u*, this applying a negative bias to the grid of *a*, which grid then shields anode *a* and inhibits firing.

Action of the rectifier is inhibited completely by downwards closure of switches *u, v, w, x, y,* and *z*. Inversion is obtained, as shown above, by lifting these switches successively, giving positive impulses to the grids of *a, b, c,* etc., at the times *X*, when the relevant anode being negative to *N* yet more positive than its predecessor, it is required that it should take its turn to fire.

In practice the switch group *u, v, etc.*, would be driven in step with the a.c. supply by a synchronous motor, hence automatic action ensured. There are also static methods of supplying the grid impulses at the required instants.

Invertor Substations

In invertor substations it is possible to have a changeover switch to reconnect a rectifier unit for inversion should the line voltage rise, or to have one unit of a group always connected for inversion, line voltage determining whether power supplying or inversion should predominate.

On the South African Railways the latter scheme has been adopted, the invertor unit being the spare unit in each substation necessary to ensure reliability. This scheme also ensures the full use of installed plant.

Because the substations are operated in parallel, omission of the invertor from any one (due to the spare being needed for its prime purpose of replacing a faulty "power" unit), will not greatly affect the receptivity of the line, invertors in adjacent substations readily accepting any excess regenerated power.

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(*Concluded*)

G.E.C. Progress and Development in 1948.—Many important orders for home and overseas figure in the review of progress for 1948 issued by the General Electric Co. Ltd. In the home traction field the principal orders were from the London Transport Executive and include 156 600-volt d.c. motors for new surface stock and the electrical equipment for seven battery locomotives for maintenance and constructional work. Among overseas orders are 40 electric locomotives for the South African Railways, which are being built by the North British Locomotive Co. Ltd., and for which all the electrical equipment, to the approximate value of £1,000,000, is being supplied by G.E.C. Details of this order were given in *The Railway Gazette* of October 1. The company has secured in face of strong competition from Continental manufacturers the first order ever to be placed for electric railway rolling stock with a British firm by a Portuguese railway. It is for 1,500-volt motor coaches and trailers, and a mixed-traffic locomotive for the Sociedade Estoril, operating between Lisbon, Estoril, and Cascais. The motor coaches have four 140-h.p. d.c. motors controlled electro-pneumatically. The locomotive is a double-bogie machine, with 1,500-volt d.c. motors, and is equipped with electro-pneumatic control. Important trolleybus orders include 75 equipments for Cardiff Corporation and 94 for Belfast Corporation. Progress continues on 54 equipments for Hobart and Launceston in Tasmania. A new form of electric braking has been developed for trolleybuses, of which the main feature is the ease with which the brake notches can be modified to suit individual requirements. Numerous installations of heavy-duty metalclad switchgear have been completed for British Railways, the B.E.A., and for export.

Power Bogie Transmission Gears

Resilient gears comprising coil springs or rubber inserts protect armatures from shock loads

AFTER Mr. O. V. S. Bulleid, Chief Mechanical Engineer of the Southern Region, British Railways, had read his paper to the meeting of the British Association in Brighton last September, a speaker in the discussion asked why the nose-suspended motor with gear and pinion drive still played so large a part in electric traction. The reply that this method was simple, cheap, and gave a good life, endorsed the choice of the system for such designs as the Southern Region Co-Co locomotives, the Bo-Bo type built for the forthcoming Eastern Region Manchester to Sheffield electrification, and now for the 1-Co+Co-1 machines to be supplied to South Africa jointly by the North British Locomotive Co. Ltd. and the General Electric Co. Ltd.

More complex forms of transmission both from bogie-mounted and frame-mounted motors are to be seen in numbers overseas, but in Great Britain the only important application of a flexible drive on the quill principle was in the experimental high-speed locomotive built for the former North Eastern Railway electrification. These facts bear out Mr. Bulleid's comment that the mechanical engineer would prefer the simple direct drive.

Resilience and Simplicity

In recent years the question of combining resilience with the mechanical simplicity of the gear and pinion drive has received much attention. With solid gears it is not only the track that is subject to stresses from traffic with axle-hung motors, nor the gear teeth themselves, but shock loads transmitted to the motor armatures may build up by oscillation to a magnitude that will cause mechanical failure of the armature and its components. Some of the measures taken to counteract these effects have been described recently in *The Metropolitan-Vickers Gazette*.

Flexible Inserts

Resilient gearwheels consist in their essentials of a toothed rim with freedom to rotate relative to the gearwheel centre, the amount of rotation being limited either by springs or rubber inserts between the two elements. It is usual for the springs to be pre-compressed, so that the gearwheel is solid as far as the normal driving torque is concerned, the springs being brought into play only by excessive overloads or shocks. By this means the undesirable resonances that may occur with free springs are avoided without the use of damping devices. Such resonances between free springs and armature conductors have been known to set up sympathetic vibrations of the latter leading to early failure of the insulation.

Gearwheels with pre-compressed springs are used in the Eastern Region Bo-Bo locomotives mentioned earlier. The helical springs, compressed before assembly, are inserted between the centre arms, which normally maintain the compression. Lugs on the inside of the rim, coincident with the centre arms, transmit the driving torque by pressure on the spring pads, and the springs are not deflected until the pre-compression value is exceeded.

Spring gearwheels must be considered as relatively expensive and complicated in construction from the point of view of general traction applications, and are found in main-line locomotives rather than in multiple-unit trains. Much progress has been made since the 1930s in the use of rubber as the resilient medium, and by now this form of construction also is adopted in some locomotives, the most recent example being the forthcoming N.B.-G.E.C. machines for South Africa mentioned earlier.

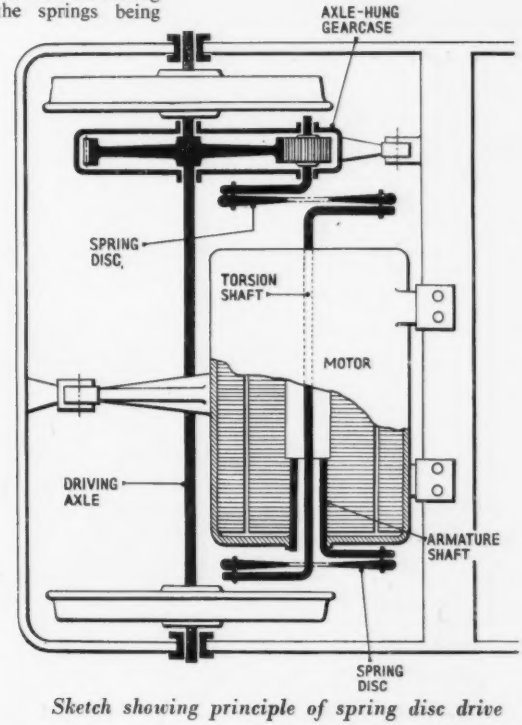
Cylindrical Rubber Bushes

Rubber minimises the wearing surfaces common in the spring gear, and, being self-damping, means that the wheel can be resilient under all conditions of load without risk of setting up undesirable resonances. Early types employed moulded rubber blocks between centre and rim, but the present practice is to use cylindrical rubber bushes. These are inserted in holes in lugs on the toothed rim. The gearwheel centre has arms with holes which are turned to coincide with the holes in the lugs, and assembly of the two parts of the gearwheel is completed by driving pins through the aligned holes. Under normal loads the restraint of the rubber prevents metallic contact between the ends of the centre arms and the inside of the rim.

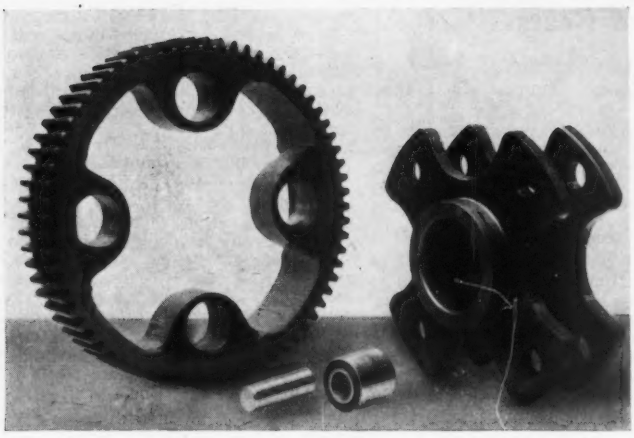
Rubber-resilient gears are quieter in operation than the spring type and also have the characteristic that the rubber-borne rim is resilient in all directions instead of only in torsion as in the spring gear. Examination of rubber-resilient gears after arduous conditions of service has shown freedom from signs of tooth failure even after the original profiles have been worn beyond recognition. This type of wheel may therefore be said to be immune from sudden or premature failures that might cause serious damage to the motor, since it will continue to give service long after the time that normal inspection would have given warning of attention being required.

Simplicity of assembly is an attrac-

Resilient gearwheel using helical springs, partly dismantled



Sketch showing principle of spring disc drive



Components of resilient gearwheel using rubber bushes

The gearwheel assembled

tion of this type of gearwheel from the maintenance viewpoint, since it is an easy matter to detach the toothed rim for replacement without removing the centre from the axle.

Spring Disc Drive

While power bogies are associated normally with axle-hung motors, the development of powerful locomotives of the power bogie type has caused the evolution of transmission systems in which the motor is supported in the bogie independently of the axle. Compactness and light weight then become essential, while the possibility of a rigid drive is ruled out on account of relative movement between the armature shaft and the driving axle.

One solution is the Swiss spring disc drive, as used in the Lötschberg Railway 4,000 h.p. Bo-Bo locomotives and also in the Swiss Federal Railways "Re4/4" class. In this system the torque is transmitted by mechanical couplings through a pair of discs, the second of which is linked to the driving pinion. Pinion and gearwheel are contained in a light gearcase carried at one end on roller bearings on the axle, and at the other by a link supported through a Silentbloc from the bogie frame. The whole assembly weighs only about 1,250 kg., and must be regarded as an important and successful contribution towards the modern high-speed power bogie locomotive.

New Railcar in Service on Swiss Rack Railway

A train on the Wengernalp rack railway, Switzerland, propelled by one of the new electric railcars described in our November 5 issue

British-Built 0-4-0 Tank Locomotives for Turkey

A lightweight saddle-tank design for the 1 *ft.* 11⅝ *in. gauge, which has a rigid wheelbase of only* 2 *ft.* 6 *in.*

AT the Castle Engine Works, Stafford, W. G. Bagnall Limited has constructed recently a series of ten 0-4-0 saddle-tank locomotives for the British Geco Engineering Co. Ltd., for use in Turkey. These engines are for a gauge of only 1 ft. 11⅝ in.; their overall length is 9 ft. 3⅞ in. and their height 6 ft. 6¾ in.

The cylinders have a dia. of 4½ in. and a stroke of 7½ in., and the wheels are 1 ft. 3¼ in. in dia. The boiler barrel is of basic steel plates and the inner firebox is of copper plates. Special arrangements had to be made for the fuel available, which consists of equal parts of "washed" and "tailings." This mixture contains approximately 60 per cent. of 0-1 mm. particles and 40 per cent. of 1-10 mm. particles, with an average ash content of 25 per cent. Firebars specially adapted to this fuel are fitted, and a mild-steel hopper ashpan of the self-dumping type is provided, with opening doors operated by levers on the footplate.

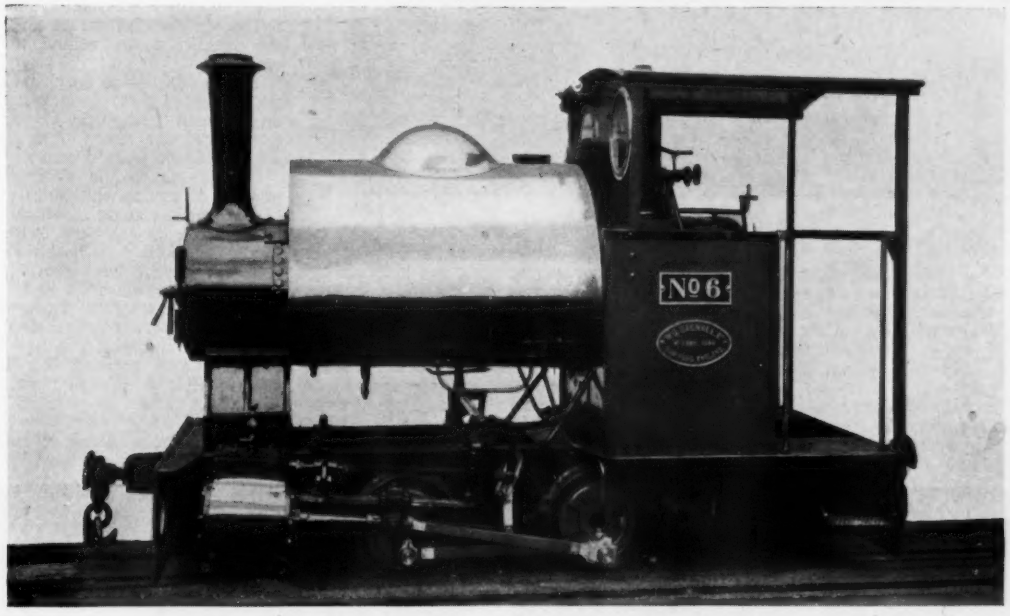
The boiler is fitted with two 1¼-in. safety valves of the Ramsbottom type, set to blow off at 170 lb. per sq. in. Saturated steam is used and boiler lagging consists of asbestos mattresses cased in steel sheets and pressed steel mouldings.

The water tank, which is arranged saddle-wise on the boiler, has a capacity of 70 gal., and the fuel bunker, which is located at the side of the cab, will hold 4 cu. ft.

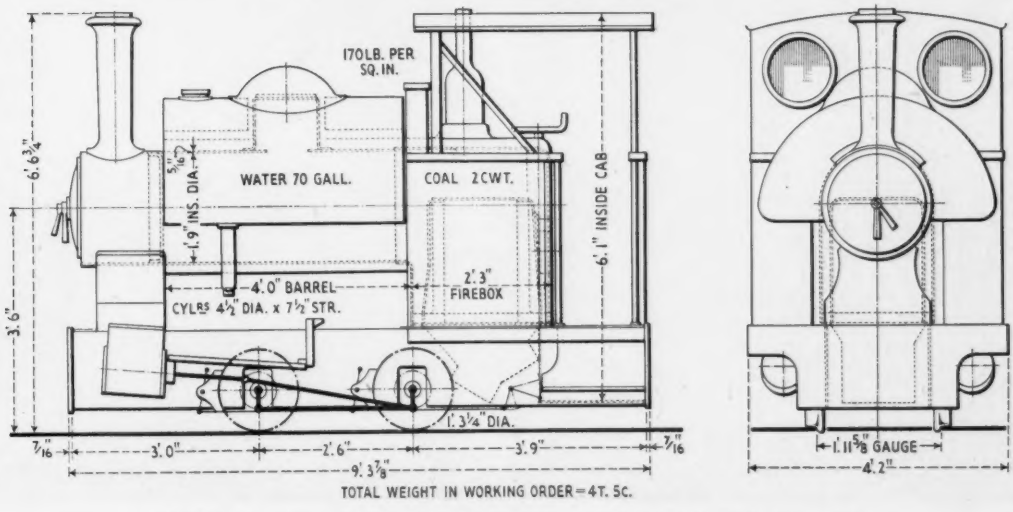
The total weight of the locomotive in running order is 4¼ tons; and with a tractive effort of 1,439 lb. at 85 per cent. of the boiler pressure, each engine can haul a load of 85 tons on the level.

The leading dimensions are as follow:—

Gauge	1 ft. 11⅝ in
Cylinders, dia. × stroke ...	4½ in. × 7½ in.
Dia. of wheels	1 ft. 3¼ in.
Wheelbase (rigid)	2 ft. 6 in.
Maximum height	6 ft. 6¾ in.
,, width	4 ft. 2 in.
Length over buffer bars ...	9 ft. 3⅞ in.
Heating surface—	
Tubes	57 sq. ft.
Firebox	11·5 ,,
Total	68·5 ,,
Grate area	2·6 ,,
Working pressure	170 lb. per sq. in.
Weight empty (approx.)	3·5 tons.
,, in working order (approx.)	4·26 ,,
Tractive effort at 85 per cent. boiler pressure	1,439 lb.
Ratio adhesive weight/tractive effort	6·1/1
with tank and bunker half full ...	
Water capacity of tank	70 gal.
Fuel ,, ,, bunker	2 cwt.



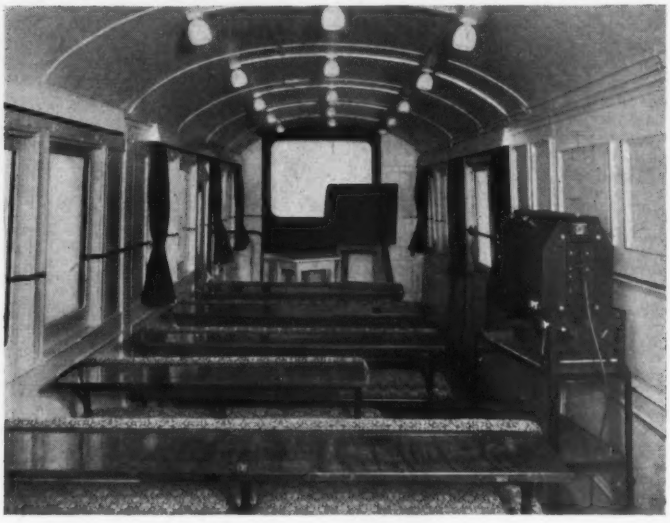
Bagnall lightweight 0-4-0 *saddle-tank locomotive for Turkey*



Outline drawing with principal dimensions of the 0-4-0 *tank locomotive*

"Schools-on-Wheels" for British Railways

Two instructional units, designed to train staff in locomotive maintenance and coal economy, are touring the London Midland and the Scottish Regions



Cinema car used for lectures

TWO "schools-on-wheels," fitted with up-to-date training equipment, including cinema projectors and working models, and staffed by locomotive experts who live and sleep on board when required, have been placed in service by British Railways.

They are designed to train enginemen and artisan staff in the technical equipment fitted on locomotives, with the object of helping the staff to work and maintain the locomotives in the most efficient manner and reduce the amount of coal consumed. Each unit is composed of two converted passenger coaches.

A similar "school" has been in use for some years on the Eastern and North Eastern regions. The two new units, which have been constructed at Derby Works, will cover between them 3,300 miles annually, demonstrating at motive power depots, including those in the most remote parts of the country, the latest locomotive equipment and technique. One unit is touring the London Midland Region (starting at Crewe), and the other is covering the Scottish Region. Future arrangements will be made to cover the Western and Southern Regions.

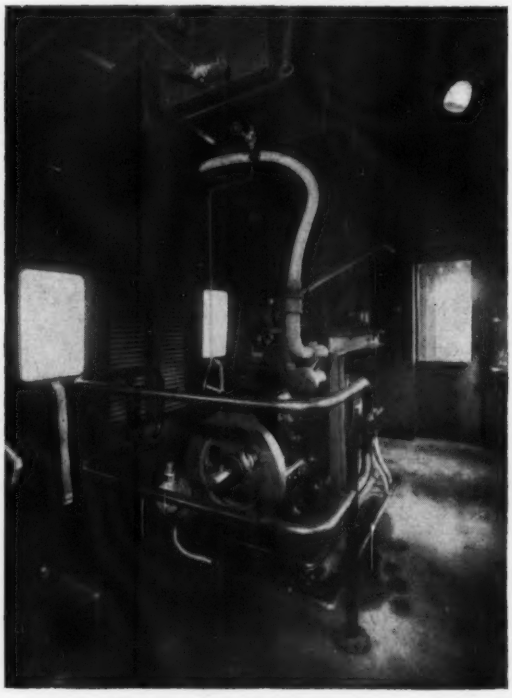
Self-Contained Trains

These instructional trains are self-contained, and comprise a lecture coach and a demonstration coach. The first has seating accommodation for 31 persons in addition to the lecturer; two projectors and a screen for the display of films, lantern slides, and so on; loudspeaker; epidiascope, diagrams, etc.; fitter's vice, bench and tools; ordinary blackboard and magnetic blackboard (6 ft. by 2 ft. 6 in.) for displaying suitable symbols for demonstrating rules for signal operation and protection; and sleeping berth, lavatory accommodation, and electric kettle for the use of the lecturer in the speaker room behind the projector screen.

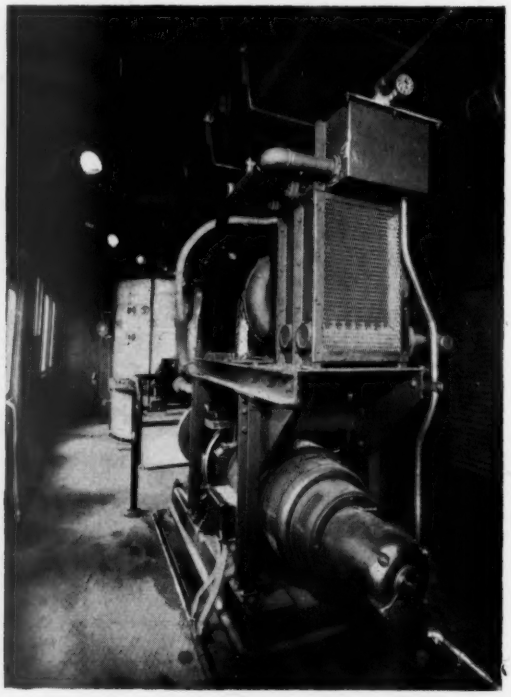
The demonstration coach includes working models of water gauges, vacuum brake arrangement, including C. & W. type, test gauges, etc.; steam brake arrangement, and automatic train control.

In addition to the working models a number of components, mostly in section, of the various parts of steam and diesel locomotives, is exhibited, with diagrams. Models of both Walschaerts and Stephenson valve gear are provided in each train. The cylinders on both models are half-section casting cut away to show the steam chest ports and cylinders. The piston valves and piston heads are in full dia., the latter about 3 in. The motion gear is of a lightweight metal alloy, and the whole model is mounted in a metal back-plate.

On each model screw reversing gear is



General view of diesel generator



A section of the engine room

Motive power instruction cars of the London Midland Region

provided which enables fine adjustment of the port openings to be obtained. One cast-brass driving wheel is fitted to each model. An inspector who is also a lecturer is in charge of each train, and travels with it from one lecture point to another, armed with a complete itinerary of the tour.

Steam Supply for Models

Steam supply for the working models is obtained from a small oil-fired stationary boiler, working pressure 140 lb. per sq. in., placed at one end of the demonstration room behind the back plate carrying the water gauges, and so on. This boiler will be coupled also to the steam heating arrangement on the train.

A diesel-driven electric generator will be installed also in the boiler room to provide current for the lighting of both coaches, and for working the film projectors and epidiascope. Tungsten lighting is provided throughout the train, with the addition of fluorescent lighting over the models.

Fuel oil for the oil-burning boilers and the diesel units for the electric generators is obtained at the motive power depots during the visit of the train. The grade of oil required is the same as that used for diesel locomotives and for cleaning purposes. The capacity on each train of the main fuel tanks is 100 gal. and the service tanks 50 gal.

The total water supply on the trains is 380 gal., 50 to 60 gal. of which is drinking water for use in the lecture car. A 100 ft. length of 1 in. bore rubber hosepipe is provided in each train for watering. The trains are cleaned and watered at the motive power depots.

An itinerary of the visits to be made by the trains has been supplied to the Divisional Operating Superintendents, England, and Operating Superintendent, Scottish Region, and suitable workings have been arranged for each train. The itineraries have been arranged on a basis of two days per 100 total staff at a depot, with a maximum of 14 days at any one depot. Depots in the English Regions with a total staff of under 50 near the main motive power depots have been included in the visits to the main depots, but depots in the Scottish Region with fewer than 50 on the staff have been arranged in the itinerary for special visits to be made to them because of their isolated geographical position.

General view of models room, which is fitted with fluorescent lighting

Police Training School, British Railways

Increased facilities have been provided for the training of recruits and arrangements are being made for refresher courses and courses for senior officers

British Railways Police Training School at Tadworth

LAST week we referred to the formal opening, on December 17, by Lt.-Colonel Sir Hugh Turnbull, Commissioner of Police, City of London, of the British Railways Police Training School at Tadworth, Surrey. On this occasion Sir Hugh Turnbull took the salute at the passing out parade of students who had just completed their course, and afterwards inspected the school premises.

The school at present has accommodation for 31 students and plans are in hand to extend the dormitories to make room for nearly double this number as soon as possible. Also, when recruiting becomes more normal it is hoped to arrange refresher courses, courses for senior officers, and detective courses.

Size of Force

Today the British Railways Police Force is about 4,000 strong, and, taken as a whole, is the second largest force in the country, the Metropolitan Police alone exceeding this figure. The only major change in organisation made since nationalisation so far is that the former L.M.S.R. and L.N.E.R. interests in Scotland have been united under a new Chief of Police for the Scottish Region. The Force is divided into six Regional units each under the charge of a Regional Chief of Police.

Consideration is now being given to the further re-organisation of the Railway Police Force, which continues to provide police services not only to the Railway Executive, but also to the Hotels Executive and to the Docks Executive in so far as railway docks are concerned.

Before the war each of the four railway companies had its own arrangements for training recruits. In some cases men were sent to the civil police schools, and weekly classes were taken by senior officers, but the training was not entirely satisfactory, and the men frequently learned more by actual experience than from the instruction given to them.

With the war came a great increase in crime, and, recruiting being practically suspended, it soon became obvious that with the cessation of hostilities the railways would be faced with the problem of training a large number of recruits. Authority was, therefore, obtained from the former railway companies for the establishment of a Railway Police School, and in July, 1946, the premises at Tadworth—which had been previously used as a school for boys—were purchased. The school had been in the possession of the army during the war and required much repair. For this reason the work of renovating and equipping the school has only just been completed.

In the meantime selected railway police officers attended a course for instructors arranged by the Home Office. The services of Mr. G. V. Frankton, formerly Superintendent in the Metropolitan Police and at one time in charge of the Metropolitan Police Training School at Peel House, were secured, and a start was made in rooms at Euston, loaned by the L.M.S.R., with a four weeks course of intensive training.

When the L.M.S.R. headquarters staff returned from their wartime premises at Watford, other accommodation had to be found, and the classes were transferred to the school, the students either travelling to and from their homes daily or lodging in the district.

Altogether 644 constables and 35 policewomen have received this short intensive training, and the nineteenth course, which will commence on January 3, 1949, will be fully residential.

Extent of Training

Students are trained in all the duties they are likely to be called on to perform. They attend lectures on police law and procedure, and take part in demonstrations covering many types of offences. They are instructed in the writing of reports and statements of evidence, and, after attending the demonstrations and writing up reports and evidence, attend "court" complete with bench, witness box, and dock.

The extent of the training necessary will be realised from the fact that during 1947 over 23,000 persons were prosecuted for offences on the railways. More than 8,000 of these were for larceny and kindred offences, over 5,000 were for ticket offences, nearly 6,000 for trespassing and stone-throwing, and 1,000 for breaches of the bye-laws.

Ample provision has been made for leisure and recreation. A fine playing-field has been brought back into condition after years of neglect, and a billiard table, two tables for table tennis, and a badminton court also have been provided. A quiet room and lounge furnish facilities for study, reading, letter writing, etc., and indoor and outdoor games will be organised. Thus every endeavour will be made to broaden the outlook of the students.

Lounge

Classroom

RAILWAY NEWS SECTION

PERSONAL

Mr. K. W. C. Grand, Chief Regional Officer, Western Region, British Railways, has become President of the Western Region Ambulance Centre. H.R.H. The Princess Christian accepted the Presidency of the G.W.R. Centre on its formation in 1896, and continued up to her death in 1923. Viscount Churchill then accepted the office, and the succeeding Presidents were Viscount Horne, Sir Charles Hambro and Sir Edward Cadogan.

Mr. A. L. Rawlinson, European Passenger Manager, Canadian Pacific Railway, retires today (December 31). He will be succeeded by Mr. George A. Hobbs, at present General Passenger Agent of the company with headquarters in London.

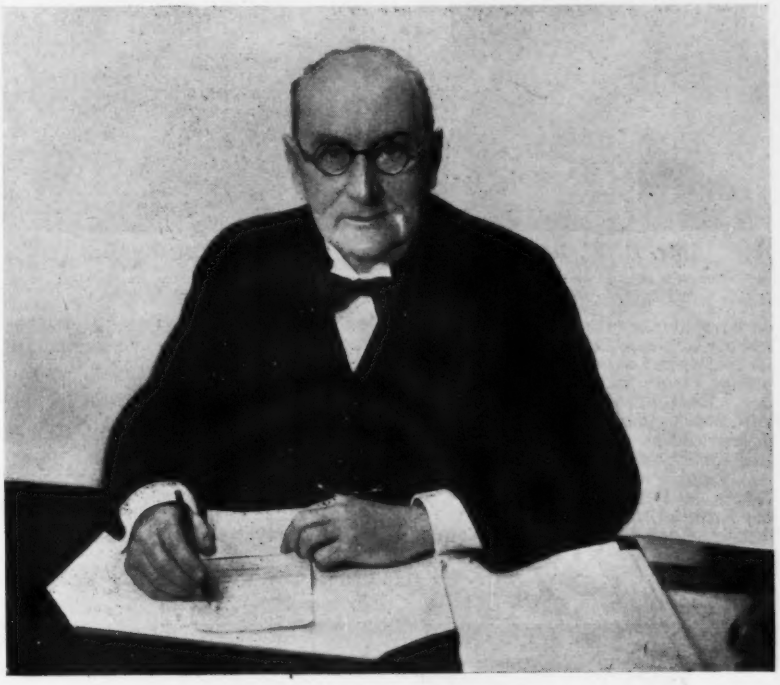
Mr. C. Haysey, District Engineer, Leeds, London Midland Region, British Railways, has been appointed District Engineer, Newcastle, North Eastern Region.

Mr. Pierre de Malglaive retires today (December 31) from the position of Chairman of the Compagnie Générale Transatlantique in London, and is succeeded by Mr. George C. Rhodes.

The British Employers' Confederation has re-elected the following officers for the ensuing year:—Honorary President: Lord Weir; President: Sir Greville S. Maginness; Vice-Presidents: Sir Frederick Bain and Mr. C. B. Clegg.

Sir Philip Mitchell, Chairman of the East Africa High Commission, Mr. E. R. E. Surridge, Acting Governor of Tanganyika, Sir Reginald Robins, Member for Transport, East Africa High Commission, and Mr. J. R. Farquharson, Chief Engineer & Deputy General Manager, East African Railways & Harbours, have left for London by air to take part in a conference on the transport problems of East Africa.

We regret to record the death on December 24, at the age of 73, of Mr. Cornelius James Selway, C.V.O., C.B.E., T.D., M.Inst.T., who was Passenger Manager, Southern Area, London & North Eastern Railway, from 1923 to 1940, and Chairman of the Passenger Committee of the Railway Executive Committee from 1938 to 1942. He was born on July 28, 1875, and was educated at Westminster City School. He joined the Great Northern Railway in 1892, in the Office of the Superintendent of the Line. He was later transferred to the General Manager's Office, and for some years acted as Secretary of various joint-line committees and as Assistant to the General Manager. At the end of 1910, when the offices of the General Superintendent, Chief Passenger Agent, and Running Superintendent were merged in that of the Superintendent of the Line, he was appointed Assistant Superintendent of the Line. He became Superintendent in 1914, and when the amalgamation took place in 1923 he became Passenger Manager, Southern Area, L.N.E.R. He was a member of the Railway Executive Superintendents' Committee from 1914 until the railways were de-controlled in 1921, and in that year he was elected Chairman of the Superintendents' Conference, Railway Clearing House; he served in that position in 1929, 1936, 1937, and 1938. He was also Chairman from 1933 to 1938 of the Fares & Services Committee appointed under the London Passenger Transport Act, 1933. Mr. Selway became Chairman of the Passenger Committee of the Railway Executive Committee in 1938. He resigned his position as Passenger Manager, Southern Area, L.N.E.R., in 1940; but continued to officiate as Chairman of the R.E.C. Passenger Committee at the special request of the R.E.C. so that that body could have the benefit of his long experience in all matters appertaining to passenger traffic. He relinquished that position in 1942.



The late Mr. C. J. Selway

Passenger Manager, Southern Area, L.N.E.R., 1923-40
Chairman, R.E.C. Passenger Committee, 1938-42

Mr. C. W. Roundell, B.A., who, as recorded in our December 17 issue, has been appointed Refreshment Room Assistant Superintendent to the Hotels Executive of the British Transport Commission, was born in 1912, and educated at Winchester College, and at Balliol College, Oxford, and took an honours degree in Modern History. From 1934 to 1938 he served a catering apprenticeship with J. Lyons & Co. Ltd., Cadby Hall, covering all branches of kitchen, restaurant and private catering work. In 1939 he was lent by Lyons to the War Office to develop centralised cooking in the Territorial Army, and from August of that year until February, 1941, was Assistant Command Catering Adviser, Eastern Command, with the rank of Captain. In March, 1941, he became Command Catering Adviser, Eastern Command, with the rank of Major, an appointment he held until September, 1943. During 1943-45 he held the posts of Catering Adviser, North Africa District; Deputy Chief Catering Officer, Allied Force Headquarters, Central Mediterranean Force; Inspector of Cookery Training (Italy); Corps Catering Adviser, 3 Corps; and Catering Adviser, Land Forces, Greece. After demobilisation Mr. Roundell joined the L.M.S.R. Hotel Services, in January, 1946, for work in connection with L.M.S.R. refreshment rooms. He was appointed Assistant to Chief Hotels Superintendent for Refreshment Rooms, L.M.S.R., in July, 1947.

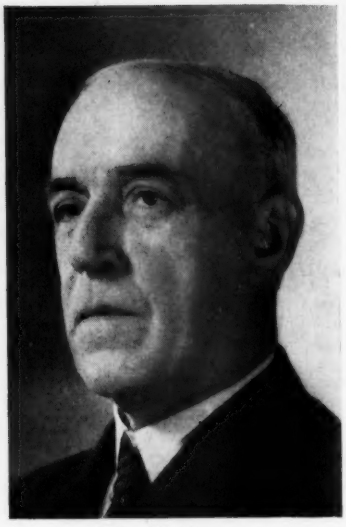
Miss Phyllis Margaret Oxenford, who, as recorded in our December 17 issue, has been appointed Chief Officer for Domestic Services to the Hotels Executive of the British Transport Commission, was born in London, and educated at Clapham High School for Girls. In 1916, she became Private Secretary to Sir Francis Dyke Acland at the Ministry of Agriculture, and subsequently served as Private Secretary to Mr. Percy Dallinger, and to Sir Lawrence Weaver, at the same Ministry. In 1919, Miss Oxenford was appointed Private Secretary to Mr. Morley Horder, F.R.I.B.A., and in the next year went to Sweden as English Correspondent to A.S.E.A. (Swedish General Electric Company). In 1921, she became Private Secretary & General Assistant to Mr. Vincent O'Neill, Barrister-at-Law. In 1928, Miss Oxenford joined the L.M.S.R. Hotel Services, and was until 1935 Private Secretary to Mr. Arthur Towle, the Controller. She was then appointed Welfare Officer & Administrative Secretary, including domestic services and furnishings (and was designated Officer for Domestic Services & Furnishings). During the succeeding ten years she was responsible for furnishing and decorating the company's hotels, refreshment rooms and ancillary premises, and for the domestic welfare of the staff. In 1937, in collaboration with the asso-

Mr. C. W. Roundell

Appointed Refreshment Room Assistant Superintendent, Hotels Executive

Miss P. M. Oxenford

Appointed Chief Officer for Domestic Services, Hotels Executive



Mr. S. Sweeney

Appointed Officer for Wines, Spirits, Beers, etc., Hotels Executive

ciated architects, she supervised the furnishing of the Queen's Hotel, Leeds, and in 1942 carried out the decoration and furnishing of the Transportation Club, London. In 1945, Miss Oxenford was appointed Assistant to Chief Hotels Superintendent (Domestic Services). In that capacity she has been responsible, in collaboration with the Hotels Engineer, the Officer for Furnishing & Decoration, and the Architect, for the rehabilitation, since the war, of the Welcombe Hotel, Stratford-on-Avon; Gleneagles Hotel, Perthshire; Dornoch Hotel, Dornoch; and the Midland Hotel, Morecambe.

Mr. S. Sweeney, who, as recorded in our December 17 issue, has been appointed Officer for Wines, Spirits, Beers, etc., to the Hotels Executive of the British Transport Commission, entered the service of the Great Western Railway in 1905, in the Goods Department, and transferred to Hotels Department in 1908. After experience in all sections of that department, he was appointed Clerk-in-Charge of the Stock Cellars in 1912, and was trained under Mr. G. J. Walker, Hotels & Catering Manager, an authority on wines and spirits. Mr. Sweeney was made London District Manager of Refreshment Rooms in 1939. He was appointed Assistant to the late Mr. R. A. P. Setterfield, then Hotels & Catering Manager, in 1946, and, in January, 1948, became Acting Assistant Manager under Mr. W. P. Keith.

Presentation to General Sir William Slim

Sir Eustace Missenden, Chairman of the Railway Executive, recently made a presentation of an inscribed silver salver on behalf of the Executive and of the Chief Regional Officers to Sir William Slim, who, until recently appointed Chief of the Imperial General Staff, was Deputy-Chairman, Railway Executive

Left to right: Mr. T. H. Moffat, Deputy Chief Regional Officer, Scottish Region; Mr. George Morton, Chief Financial Officer, and Messrs. V. M. Barrington-Ward and R. A. Riddles, Members of the Railway Executive; Sir William Slim; Mr. John Elliot, Chief Regional Officer, Southern Region; Sir Eustace Missenden; Mr. C. P. Hopkins, Chief Regional Officer, North Eastern Region; Mr. G. L. Darbyshire, Chief Regional Officer, London Midland Region; Messrs. J. C. L. Train, David Blee, C. Nevile (part-time) and W. P. Allen, Members, Railway Executive; Mr. K. W. C. Grand, Chief Regional Officer, Western Region; Mr. C. K. Bird, Chief Regional Officer, Eastern Region; and Messrs. E. G. Marsden, Secretary, and H. L. Smedley, Legal Adviser & Solicitor, Railway Executive

Some Features of the Netherlands Railways*

Mr. H. L. Collins describes a visit paid by Southern Region officers to the Netherlands

During a visit to Holland, Mr. John Elliot, Chief Regional Officer of the Southern Region, British Railways, then General Manager of the Southern Railway, when discussing traffic operations with Mr. F. Q. Den Hollander, President of the Netherlands Railways, arranged for an exchange of traffic officers. Accordingly, three senior Assistant Divisional Superintendents of the Dutch railways spent a fortnight studying traffic operations on the Southern Railway; on their return home, three Southern Railway officers of equivalent grade visited Holland from November 11 to 22 last year, and were accompanied on visits by the three Dutch officers to whom they had acted as hosts in this country.

The passenger traffic of the Netherlands Railways provides 75 per cent. and the goods traffic 25 per cent. of the revenue, which is comparable with the figures of the Southern Region. In Holland, however, there is nothing to equal the London area problem which has such an influence on Southern Region requirements.

Headquarters Organisation

The headquarters organisation of the Netherlands Railways compares somewhat with that of the Southern Region, except that it has three general managers, one of whom is designated the Chief General Manager, or President, of the organisation. One is responsible for the traffic side, one for motive power, and one for the commercial side. The Motive Power Department covers steam, electric, and diesel-electric trains, and all outdoor machinery; it is responsible also for electric power distribution and carriage cleaning. There are ten divisions—which eventually will be reduced to eight—with approximately 60 stations each. The Divisional Superintendent is responsible for both operating and commercial business, but not for timetable compilation.

Applicants to the railway service are graded for entry into one of four groups, which really indicate the limits of promotion, as only in isolated cases is it possible to pass from one group into another. The following table illustrates the grading:—

Group	*Educational standard*	*Initial grade*	*Limit of promotion for group*
1	Elementary school	Porter	Head signalman
		Learner guard	Yard foreman
			Senior checker
			First porter
			Telegraphist
2	Intermediate school	Junior clerk	Stationmaster, class 4
			Yard inspector
			Local controller (station duties)
3.	Matriculation standard ...	Stationmaster, class 4	Chief booking clerk (main station)
		Clerk apprentice or runner ...	Stationmaster (special class)
			Chief divisional inspector
			2nd asst. div. superintendent
4	University	Cadets posted to departments according to degree obtained	Divisional superintendent
			Chief of section at headquarters
			Departmental managers, and all higher positions

Each new entrant receives training according to his group. At the headquarters building there is a school with a staff of 28 teachers. To cater for men working at outlying stations, there is a teacher at Amsterdam, Rotterdam, Maastricht, and two other centres.

Men in group 1 go to school two days a week for the first year's service and are taught railway geography, elementary rules and regulations, arithmetic and—for some—telegraphy (sounder). For their first nine months, those in group 2 spend two weeks at the school in Utrecht and one week at a station, studying all duties.

It has been established that an intake of 28 candidates a year is sufficient to cover wastage in Group 3. Applicants for entrance to group 3 must produce proof of matriculation standard, undergo an oral examination, and be seen by a psychiatrist. When accepted, they are sent to Utrecht headquarters, although every third week is spent at a station to gain local knowledge.

Group 4 entrants begin as cadets and receive two years' training on somewhat similar lines to group 3, except that it covers a wider range of railway subjects. All teachers are full-time men, and 95 per cent. are railwaymen of proved ability.

When girls are employed in booking offices they are given six months' preliminary training at the school. All enquiry offices are staffed by women, who have six months' training before coming into contact with the public. They are expected to help the public by not only quoting railway facilities, but also giving advice on hotels, theatres, and so on.

Signalling

Signals are semaphores, placed on the right-hand side of the line, as right-hand running prevails. There is little or no colour-light signalling, but experts are studying this method in the United Kingdom and America. Signalling is based on the lock rather than the block. Warning boards, painted black and white, are provided 165 yd. on the approach side of distant signals, and take the place of fog-signalmen in foggy weather.

Authority was obtained to dispense with level-crossing gates on some unimportant roads, and some more important crossings have traffic lights in the road only, which are operated by an approaching train. The owner of land adjoining the railway is responsible for fencing it, if he considers it necessary.

It is intended to complete the electrification of all important routes and cover branch lines with diesel traction. The present electric stock consists of three- or five-car multiple-unit sets, and the diesel-electric trains are of one, three, and five cars. Timekeeping is good, except where upset by international trains. Overcrowding is still bad, because of shortage of stock. This has forced the Netherlands Railways to speed up the turn-round of trains, and to this end some small stations have been closed and bus feeder services have been introduced. The buses are operated by a subsidiary company.

Timetables are prepared at headquarters by means of graphs, which are reproduced afterwards in coloured printed form for use by the supervisors. After the war a system of control was adopted, and there are now ten control offices, which will be reduced to eight to coincide with the divisions.

The method of recording is by graph, for a particular area, to be prepared covering 4, 6, or 8 hr. according to traffic density. The graph lasts for the period of the summer or winter service. On top of the graph is placed an overlay of parchment paper, on which is shown in graph form the actual running of the trains. In effect the recorder puts a dot on the overlay at the given point to indicate the time instead of recording in actual figures the time given him over the telephone by the station staff. When the recorder has a second time recorded he simply draws a line between the two points, writes up the side of the line the number of the train, which can be related to its booked working as indicated by a standard graph underneath.

This system would present many difficulties on the Southern Region because of the density of traffic, but it meets all the requirements of the Netherlands Railways.

Freight Working

All wagons have the automatic brake, enabling fast schedules to be worked. The country is zoned and the traffic divided into: ordinary freight traffic; coal traffic; smalls; and containers. Zones differ according to the flows of the particular traffic. There are 20 group stations for ordinary freight traffic, 26 for coal, 34 for smalls, and 28 for containers. Cartage work from the group stations is performed by an associated company.

At Amersfoort group station for "smalls" the associated company has developed a system of detachable covered mounts for its road vehicles which can be removed to special railway flat wagons for the purpose of being moved along a siding.

Open and closed containers, both of 5-ton capacity, are used, and special railway wagons have been designed to carry three of them. By an ingenious securing device, a container may be secured to a wagon or prepared for off-loading in approximately three minutes. The demand for container service is so great that it is possible to arrange nominated loading and also to agree with the traders the destinations to be loaded on a given day. Ordinary rates are charged for the traffic conveyed in containers, but a charge equivalent to £1 per container is made for delivery and £1 for collection up to 5 km., plus an addition for each additional km.

Stations

Generally, stations are "closed," with entrance and exit on the extreme edge of the station buildings. The more up to date have a good appearance and splendid facilities for the staff. The through Amstel Station, Amsterdam, was completed just before the 1940 invasion as the result of an agreement with the municipality to close a terminus and 55 level crossings. Nevertheless the number of passengers using the station is small, mainly because the immediate area has not been developed as a building site, and the civic authorities have not extended public transport service to serve the station.

There are twelve deep-pit collieries and two open-cast works in the south. Of the deep pits, four are State-owned and connected with the canal port of Stein by a State railway entirely separate from the Netherlands Railways. A proportion of the coal from the State mines is conveyed by water, but there are connecting links between the mines railway and the Netherlands Railways.

* Abstract of a paper on the Netherlands State Railways, read before the British Railways (Southern Region) Lecture & Debating Society, on October 28, 1948, by Mr. H. L. Collins, Assistant Divisional Superintendent, Orpington, Southern Region

British Transport Commission Statistics

Summary of the principal statistics for the four-week period ended October 31

Number 11 of *Transport Statistics* was published by the British Transport Commission just before Christmas. It brings the series down to October 31 and our usual set of tables summarises the principal results. In our issue of December 17, we discussed the decrease in British Railways' receipts and need only add that their passenger takings for the month of October were less by 2·6 per cent., although the number of passenger journeys originating was 3·2 per cent. greater, as shown in Table 2 (A). As was the case in September, there was a large increase in the issue of excursion, weekend and other cheap tickets, though bookings at monthly return fares decreased by over 15 per cent. Evidently, many of the passengers, who took advantage of the cheap fares, would have travelled at the higher fares previously in force. This transfer from one category to another was rife in the North Eastern Region.

Freight train traffic originating was 1,601,000 tons higher, or 7·6 per cent., but forwardings of merchandise were down in every Region, except the North Eastern. That Region also had an increase of nearly 25 per cent. in minerals and of 10 per cent. in coal. The London Midland and Eastern Regions, too, carried large tonnages of heavy traffics and consequently worked more ton-miles, as shown in Table 2 (C). In Scotland, ton mileage rose slightly; the Western Region's figure was nearly 4 per cent. lower—probably due to a larger proportion of coal travelling short distances to shipment places.

STAFF

—	Commission's Head office	British Railways	London Transport	Hotels & Catering	Steamships Marine & Docks	Inland Waterways	Railway Clearing House	Total
Administrative ...	136	80,083	4,921	1,900	2,178	708	613	90,539
Operating ...	—	347,984	61,028	—	15,135	1,853	—	426,000
Maintenance & construction ...	—	213,528	31,079	—	7,249	2,789	—	254,645
Others	13	14,516	3,970	14,794	157	—	347	33,797
Total ...	149	656,111	100,998	16,694	24,719	5,350	960	804,981

1. BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

—	Four weeks to October 31		Inc. or dec.	Aggregate to October 31		Inc. or dec.
	1948	1947		1948	1947	
	£000	£000	£000	£000	£000	£000
British Railways—						
Passengers	7,935	8,153	− 218	106,817	99,865	+ 6,952
Parcels, etc., by passenger train... ...	2,275	2,286	− 11	24,702	22,035	+ 2,667
Merchandise	6,630	7,401	− 771	70,298	61,772	+ 8,526
Minerals	2,492	2,319	+ 173	24,345	17,966	+ 6,379
Coal & coke	5,618	5,544	+ 74	56,189	46,411	+ 9,778
Livestock	211	176	+ 35	1,015	892	+ 123
	25,161	25,879	− 718	283,366	248,941	+ 34,425
Steamships	664	555	+ 109	8,491	7,676	+ 815
Inland Waterways	149	141	+ 8	1,435	1,290	+ 145
Hotels & Catering	1,047	960	+ 87	11,326	10,541	+ 785
London Transport—						
Railways	1,140	1,060	+ 80	12,296	11,154	+ 1,142
Buses & coaches	2,466	2,314	+ 152	26,879	24,306	+ 2,573
Trams & trolleybuses	882	854	+ 28	9,538	8,841	+ 697
	4,488	4,228	+ 260	48,713	44,301	+ 4,412
Total	31,509	31,763	− 254	353,331	312,749	+ 40,582

Table 2 (D) raises several questions about the need for the whole of the extra coaching train mileage run. The total additional steam mileage was 890,000 and of that amount, 26 per cent. was run in the Western Region, where the number of passengers booking in October was 5·4 per cent. below 1947. The Western arrangements would not appear to have fitted the traffic offering so well as the Southern Region's timetable, which provided a liberal increase in train services, but brought a fairly proportionate addition to the passenger bookings.

Freight-train speed dropped to the poor level of 8·12 m.p.h. from 8·42 in the period to October 3. Only the Scottish, North Eastern and Western Regions had fairly satisfactory results. It is difficult to reconcile the slow movement revealed by the statistics with the Railway Executive's statement that freight services are being progressively accelerated and improved. The slower movement, together with an increase in freight train loads, caused a heavier consumption of coal per engine mile of 63·28 lb.

2. BRITISH RAILWAYS

(A) Passenger Journeys Originating in the Month of October

—	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Ordinary fares	1,424,000 (−9·53)	660,000 (−7·06)	1,862,000 (−7·06)	847,000 (−1·85)	170,000 (−7·64)	300,000 (−10·07)	5,263,000 (−7·15)
Monthly return	5,932,000 (−13·86)	1,627,000 (−27·98)	6,851,000 (−11·08)	1,819,000 (−13·86)	450,000 (−38·36)	907,000 (−20·13)	17,586,000 (−15·57)
Excursion, weekend, cheap day, etc. ...	2,596,000 (+271·87)	1,632,000 (+196·90)	2,955,000 (+252·28)	778,000 (+264·06)	689,000 (+324·18)	694,000 (+480·20)	9,344,000 (+261·85)
Workmen	7,399,000 (−4·50)	1,801,000 (−8·63)	6,425,000 (−0·15)	1,929,000 (−9·11)	943,000 (−9·89)	981,000 (+0·14)	19,478,000 (−4·06)
Other descriptions ...	1,305,000 (−13·76)	855,000 (−19·49)	1,384,000 (−17·40)	633,000 (−17·97)	296,000 (−28·78)	347,000 (−25·16)	4,820,000 (−18·32)
Season tickets	5,830,000 (−0·95)	1,953,000 (−20·70)	10,409,000 (+23·77)	2,131,000 (−4·90)	685,000 (−10·60)	1,790,000 (+0·72)	22,798,000 (+5·83)
Total	24,486,000 (+0·74)	8,528,000 (−5·40)	29,886,000 (+10·42)	8,137,000 (−2·23)	3,233,000 (−2·18)	5,019,000 (+4·37)	79,289,000 (+3·21)

(B) Freight Tonnage Originating

—	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Merchandise	1,340,000 (−3·96)	821,000 (−1·33)	311,000 (−1·15)	616,000 (−1·94)	603,000 (+1·89)	646,000 (−8·54)	4,337,000 (−2·94)
Minerals	1,638,000 (+4·02)	665,000 (+7·27)	148,000 (+10·79)	883,000 (+13·28)	926,000 (+24·64)	665,000 (+13·54)	4,926,000 (+11·01)
Coal & coke	4,751,000 (+12·51)	1,971,000 (+5·38)	264,000 (−2·36)	2,139,000 (+12·91)	2,477,000 (+10·47)	1,669,000 (+8·86)	13,271,000 (+10·29)
Livestock	29,000 (+13·78)	23,000 (+9·12)	6,000 (+0·92)	9,000 (−11·58)	17,000 (+10·60)	55,000 (−0·35)	139,000 (+4·38)
Total	7,758,000 (+7·48)	3,480,000 (+4·08)	729,000 (+0·63)	3,647,000 (+10·10)	4,023,000 (+11·99)	3,036,000 (+5·38)	22,673,000 (+7·60)

(C) Net Ton Miles

—	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent
Merchandise & livestock ...	201,257,000 (+3·59)	106,037,000 (−6·64)	23,057,000 (−2·76)	89,433,000 (+6·57)	51,454,000 (−1·44)	90,025,000 (−1·95)	566,263,000 (+0·28)
Minerals	131,940,000 (+0·80)	76,912,000 (+11·05)	17,375,000 (+4·76)	106,063,000 (+14·90)	35,439,000 (+24·42)	43,087,000 (+10·32)	410,816,000 (+9·09)
Coal & coke	312,594,000 (+7·70)	128,310,000 (−9·16)	29,280,000 (−8·47)	189,366,000 (+11·34)	70,122,000 (+16·36)	66,118,000 (+1·10)	794,790,000 (+4·84)
Total, all classes of traffic ...	645,791,000 (+4·94)	311,259,000 (−3·96)	73,712,000 (−3·44)	384,862,000 (+11·13)	157,015,000 (+11·40)	199,230,000 (+1·51)	1,771,869,000 (+4·27)

(D) Train Miles

—	Region						Total
	London Midland	Western	Southern	Eastern	North Eastern	Scottish	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Coaching train miles—							
Steam—							
Loaded	4,178,000 (+6·69)	2,874,000 (+8·60)	1,480,000 (+10·40)	2,521,000 (+8·62)	1,005,000 (+6·51)	1,691,000 (−1·19)	13,749,000 (+6·76)
Empty	105,000 (+2·72)	123,000 (+3·33)	48,000 (+16·28)	88,000 (+8·58)	40,000 (+13·86)	51,000 (−9·83)	455,000 (+4·51)
Total loaded & empty ...	4,283,000 (+6·59)	2,997,000 (+8·37)	1,528,000 (+10·58)	2,609,000 (+8·62)	1,045,000 (+6·77)	1,742,000 (−1·47)	14,204,000 (+6·68)
Electric—							
Loaded	423,000 (+9·23)	—	2,945,000 (+13·12)	21,000 (−61·23)	92,000 (+6·93)	—	3,481,000 (+11·18)
Empty	21,000 (−5·83)	—	63,000 (+8·28)	2,000 (−11·70)	9,000 (−2·11)	—	95,000 (+3·25)
Total loaded & empty ...	444,000 (+8·39)	—	3,008,000 (+13·02)	23,000 (−59·39)	101,000 (+6·01)	—	3,576,000 (+10·95)
Freight train miles—							
Loaded	3,153,000 (+2·34)	1,659,000 (+1·39)	549,000 (−3·80)	1,816,000 (+7·68)	935,000 (+6·30)	1,432,000 (−1·54)	9,594,000 (+2·51)
Empty	556,000 (+2·45)	196,000 (−2·18)	12,000 (−9·08)	342,000 (+5·66)	221,000 (+28·52)	212,000 (+10·51)	1,539,000 (+6·61)
Total loaded & empty ...	3,709,000 (+2·35)	1,855,000 (+1·01)	561,000 (−3·91)	2,158,000 (+7·36)	1,156,000 (+9·94)	1,694,000 (−0·18)	11,133,000 (+3·06)
Total coaching and freight train miles—							
Loaded	7,754,000 (+4·99)	4,533,000 (+5·86)	4,974,000 (+10·14)	4,358,000 (+7·28)	2,032,000 (+6·49)	3,173,000 (−1·33)	26,824,000 (+5·73)
Empty	682,000 (+2·26)	319,000 (—)	123,000 (+9·82)	432,000 (+6·11)	270,000 (+24·42)	263,000 (+5·62)	2,089,000 (+5·98)
Total loaded & empty ...	8,436,000 (+4·77)	4,852,000 (+5·43)	5,097,000 (+10·15)	4,790,000 (+7·19)	2,302,000 (+8·30)	3,436,000 (−0·84)	28,913,000 (+5·75)

(E) Freight Train Miles per Train Hour

Region												Total	
London Midland		Western		Southern		Eastern		North Eastern		Scottish			
1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947
6·98	6·67	9·09	8·15	8·68	8·69	7·94	7·45	9·76	9·19	9·39	9·51	8·12	7·73

(F) Locomotive Coal Consumption

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
	Tons	Per cent.	Tons	Per cent.	Tons	Per cent.	Tons	Per cent.	Tons	Per cent.	Tons	Per cent.	Tons	Per cent
Tonnage consumed ...	355,000	(+1·41)	174,000	(+9·82)	77,000	(+7·14)	209,000	(+3·37)	92,000	(+1·76)	180,000	(+1·88)	1,087,000	(+3·49)
Lb. per engine mile ...	64·98	(−1·25)	53·14	(+4·79)	55·24	(+3·56)	66·02	(−2·45)	62·01	(−3·41)	75·11	(+2·30)	63·28	(+0·03)

(G) Rolling Stock Position

—	Operating stock	Number under repair	Serviceable stock	Serviceable stock in 1947
Locomotives	19,726	3,707	16,019	16,035
Coaching vehicles	55,379	6,290	49,089	47,605
Freight wagons	1,178,993	135,162	1,043,831	1,025,727

3. INLAND WATERWAYS

Tonnage of traffic and ton-miles

—	Tonnage	Per cent.	Ton-miles	Per cent.
General merchandise ...	326,000	(+2·11)	5,807,000	(−1·98)
Liquids in bulk	141,000	(+1·89)	3,340,000	(+31·92)
Coal, coke, patent fuel, & peat	436,000	(+12·84)	6,544,000	(+2·96)
Total	903,000	(+6·99)	15,691,000	(+5·93)

4. LONDON TRANSPORT

(A) Passenger Journeys Originating

—	Number	Per cent.
Railways	51,166,000	(+5·87)
Buses & coaches	215,399,000	(+7·23)
Trams & trolleybuses ...	94,386,000	(+3·75)
Total	360,951,000	(+6·10)

(B) Rail and Road Car Miles

—	Miles	Per cent.
Railways	17,803,000	(+8·32)
Buses & coaches	24,292,000	(+5·11)
Trams & trolleybuses ...	8,782,000	(+2·78)
Total	50,877,000	(+5·79)

Sir James Milne's Report on Transport in Ireland

Central Highways Authority — Re-constitution of C.I.E. Board—Need for faster and more frequent trains—G.N.R. to be taken over by C.I.E. and Ulster Transport Authority

Sir James Milne's report* on transport in Ireland has been handed to the Minister for Industry & Commerce. On July 1, 1948, Sir James Milne was given the following terms of reference:—

To examine and review the position of rail, road, and canal transport and to report to the Minister for Industry & Commerce thereon and on the steps it is necessary or desirable to take to secure:—

(*a*) the greatest measure of co-ordination of rail, road and canal transport,

(*b*) the restoration of the financial position of the public transport companies; and

(*c*) the most efficient and economical transport system.

The report finds that the conditions under which the various forms of transport in Ireland operate are inequitable in the unequal incidence of track cost as between rail, canal, and road transport, and the more onerous obligations and restrictions imposed on public undertakings compared with other operators. It is recommended that railway tracks, canal waterways, and the roadways should all be treated as parts of a national system of highways for the use and upkeep of which each form of transport should contribute on an equitable basis.

Members of the public should be free to select the form of transport best suited to their requirements. Traders are the best judges of their own transport requirements and freedom to operate their own vehicles is a safeguard against monopoly and a stimulus to public undertakings to provide cheap and efficient service. The retention of the right of traders to transport their own goods should be subject to such conditions as will prevent unfair competition with public services.

All forms of transport should be allowed to operate under fair and equitable conditions, so that each can function efficiently and as part of a properly integrated system of transport.

It is recommended that a Central Highways Authority should be established for the maintenance and improvement of the highway system. All forms of transport should contribute towards the cost of highways upkeep. The contribution by road motor transport would be paid by way of licence duties and petrol tax as at present and the contribution payable by railways and canals would be based on their gross receipts in the proportion which the licence duty and petrol tax payable by public undertakings operating road services bears to the gross receipts from those services.

In Ireland there are 1,633 miles of road per 100,000 population compared with 360 in England and 520 in Scotland. The cost of providing and maintaining highways is only partly covered by the contributions paid by the owners of motor vehicles for the use of the roads; the increased expenditure on improvements and maintenance which will have to be incurred if there were any large growth in the use of the roads by large commercial vehicles would place a very heavy burden on the financial resources of the country. Therefore, it is in the national interest that as much traffic as possible should be conveyed on the railways and canals.

Coras Iompair Eireann

The services provided by C.I.E. are the backbone of the present public services and form the natural foundation for their future development. Wide powers are vested in the Chairman of C.I.E., but the control exercised by the Board as a whole over the affairs of the company leaves much to be desired. It is wrong in principle that the responsibility for the administration of the affairs for a large public undertaking should devolve almost entirely on the shoulders of a single individual. It is recommended:—

(*a*) The responsibility for administration of the company should be vested in the Board as a whole.

(*b*) The Board should be re-constituted, at least two additional Government Directors appointed, one a representative of labour.

(*c*) The company's obligations should be defined and limited to measures necessary to secure an economical and efficient transport system; the special powers of Government Directors should be limited to the right to veto capital expenditure.

Capital expenditure amounting to £5,325,000 has been authorised between January 1, 1945, and August 31, 1948. A review of schemes on which heavy expenditure has still to be incurred is recommended.

It is considered that the use of large main-line diesel-electric engines in Ireland is unwarranted, and it is recommended that endeavour be made to cancel the order already placed for six large passenger engines likely to cost about £80,000 each.

Present output of new boilers for locomotives from the company's workshops should be sufficient for replacement purposes and endeavour should be made to cancel an order placed in England for 94 boilers.

The plans for improving the lay-out at Limerick Junction should be reviewed and a less costly scheme prepared.

The provision of a new spring shop at Inchicore is considered unnecessary. It is doubtful whether the provision at Dublin Store Street of a bus station and central offices was sufficiently important to justify the expenditure.

A modified scheme should be prepared making use of existing buildings in place of the new chassis maintenance and body-building shops at Broadstone.

The scheme to erect a new factory at Inchicore to manufacture motor chassis for the company's use and for sale cannot be regarded as an essential adjunct to an official transport system. If it is decided in the national interest to proceed with the project it is recommended that the work should be entrusted to a separate undertaking. The wages paid in Ireland are higher than in England and the prime cost of manufacture would therefore be higher.

The scheme at Waterford for the reconstruction of the wharf on the north side of the river does not meet the more urgent need of providing proper facilities for dealing with existing traffic.

The present organisation of the traffic department cannot be regarded as satisfactory. To ensure co-ordination of road and rail services responsibility for the operation of all road and rail services—except passenger services within city areas—should be vested in the Operating Superintendent, and responsibility to all commercial matters in the Commercial Superintendent, in both cases under the Traffic Manager. District organisations should be made uniform.

The present passenger train service is inadequate. A more frequent and rapid service with lighter trains would be better suited to requirements in Ireland. There appears to be considerable scope for the use of diesel railcars, and it is recommended that an order be placed for a limited number of cars. Freight trains should be expedited and sources improved with the objective of enabling all merchandise traffic to be collected and delivered within 24 hours to customers located on the company's system. The introduction of zonal collection and delivery schemes under which road services would collect and deliver traffic within a radius of 10 to 15 miles or even 20 miles from a railway station is recommended.

Branch lines should not be closed if their retention is necessary or desirable in the public interest, which can be determined only by holding a public inquiry.

First and third class passenger fares should be fixed on the basis of 3d. and 2d. per mile respectively for the single journey; return fares to be 50 per cent. more than the single fares (no alteration in present return fares.) Cheap day facilities at single fare and half-day excursions at half single fare for the return journey should be introduced on a wide scale to encourage travel. An increase in rail freight rates at present would tend to lead to a greater diversion of traffic from rail to road. When transport conditions have been equalised, better train services provided and transit time reduced, rates should be revised in the light of the cost to the trader of providing his own transport. Freight rates should then be adjusted as necessary to meet the net revenue position.

Scheduled long-distance bus services running parallel to the railway should be withdrawn when railway passenger services have been improved. Local bus services operating from selected rail centres should then be instituted. An increase in bus fares to enable the company to earn a net profit of £1 million per annum is justified. In city areas the existing fare stages and the 1d. fares should remain unaltered; 1½d. fares should be increased to 2d., and all other fares to 1d. per mile. Fares on provincial services should be 1½d. per mile, but short stage journeys should be introduced extensively in country areas at fares of 1d. per mile.

Road freight services should be ancillary to the railway services and provision of adequate feeder services should receive first consideration.

It is recommended that a liberal policy for the provision of suitable modern machine tools and other equipment should be pursued at all repairing centres for locomotives, carriages and wagons. This should result in a reduction in man hours which would more than justify the initial outlay involved. Consideration should be given to the possibility of introducing some financial incentive to increase output.

Estimated expenditure on repair of locomotives for the current year is £669,500, an increase of £317,000 over 1945. It is abnormally high owing to the stock of

* "Report on Transport in Ireland, 1948." Government Publications Sale Office, 3-4, College Street, Dublin. Price 3s. 6d.

locomotives being in excess of requirements to the excessive quantum of repairs required on account of obsolescence and the arrears of work which have to be undertaken. This expenditure works out at 17·8d. per mile; under normal conditions this figure should be reduced to 10d. per mile which would give a saving of £250,000 on the estimate for the current year.

The estimated expenditure on repair of coaching stock for the current year is £234,300, and it is improbable that any reduction can be effected until some of the arrears and renewals have been overtaken.

The estimated expenditure on the repair of wagons is £348,800, or £151,000 in excess of 1945. With a greater inflow of new wagons considerable economy in repairs may be anticipated with a minimum saving of £100,000 per annum as compared with 1948.

The annual salaries and wages bill at the rates ruling in November, 1948, is estimated at £6,500,000, compared with £4 million paid in 1945. Of the increase, £1,600,000 is the result of improved rates of pay and conditions of service and £900,000 is due to an increase in staff establishment. The total number of staff employed in March, 1948, was 21,279, an increase of 3,068, or 17 per cent. compared with March, 1945. An overall reduction of at least 5 per cent. in salaries and wages should be possible which would produce a saving of more than £300,000 per annum.

The report points out that financial recovery of the company can only be gradual. The Government might consider the possibility of assisting it by affording some relief from the liability to repay sums advanced under the guarantee of debenture interest and by meeting interest during construction on capital works undertaken in the national interest. Extensive capital re-equipment is necessary before an adequate service can be provided. The total capital required will be £10½ million. The company should be able to finance £3½ million of the capital required from accrued provisions for depreciation and a further £1 million from other sources. A further issue of debenture stock will be necessary to finance the balance of £6 million and another issue of debenture stock will be required to effect redemption of the 3 per cent 1955/60 issue amounting to £9,889,083.

Great Northern Railway (Ireland)

It is recommended that the Great Northern Railway Company's scale of passenger fares within the 26 counties should be made uniform with that proposed for C.I.E. with the following effect:—

	Pence per mile	
	Present fare d.	Proposed fare d.
First class—Single ...	2·798	3·0
Return ...	4·666	4·5
Third class—Single ...	1·866	2·0
Return ...	2·8	3·0

A scheme for ownership and operation of the Great Northern Railway is submitted under which:—

(*a*) The Great Northern Railway would continue to be responsible for the operation of rail and road services in the areas in which they are now provided.

(*b*) Ownership of the fixed assets of the company situated on either side of the border would be taken over by C.I.E. and the Ulster Transport Authority respectively, but the assets would continue to be used by the Great Northern Railway.

(*c*) Staff resident in the 26 counties would be subject to the same rates of pay and conditions of service as employees of C.I.E.; similarly, those resident in the six north-eastern counties would be subject to the conditions applicable to employees of the Ulster Transport Authority.

(*d*) Receipts and expenditure of the company to be so divided that each party would retain the revenue and bear the direct cost of services within its own territory.

Grand Canal Company

The Grand Canal Company has experienced difficulty in meeting increased costs of maintaining and operating the canal by raising its canal charges, since these are fixed in relation to C.I.E. rail rates. Direct road services have recently been developed, and it is considered that full co-ordination of the company's road and canal services with the rail and road services of C.I.E. could be more readily achieved under common ownership, and it is recommended that C.I.E. should exercise its powers under the Transport Act, 1944, to acquire the Grand Canal Company as a going concern.

Minor Railways Operating Cross-Border Services

If steps are ultimately taken on the proposals for joint ownership of the Great Northern Railway by C.I.E. and the Ulster Transport Authority, the minor companies operating cross-border services should be acquired by the reconstituted Great Northern Company.

Licensing of Commercial Road Vehicles

With a view to establishing equitable conditions for operation of commercial road vehicles the following recommendations are made:—

For goods vehicles differential rates of duty should be introduced as under:—

(*a*) Local licences which would permit the use of vehicles within a radius of 15 miles from a point selected by the licensees. The duty payable would be the standard rate.

(*b*) General licences which would permit the use of vehicles in any part of the country. The duty payable would be double the standard rate.

(*c*) Licensing provisions for passenger vehicles to be raised to conform to the principle of a differential rate of duty for long and short distances.

General licences to merchant users should limit the use of vehicles to the conveyance of the licensees goods to or from his business premises and should not permit the carriage of goods which are in the ownership of the licensee only during transit.

In the financial sections of the report it is proposed to revise the basis of depreciation adopted by the Irish Transport Company and that this should be made retroactive to January 1, 1945, and a reconstruction of the balance sheet carried out accordingly as at January 1, 1948. The effect will be to convert the debit balance of £811,901 on profit and loss account at December 31, 1947, into a credit balance of approximately £75,000. After allowing for the effect of recent wage awards, debenture interest and so forth, the debit balance at December 31, 1948, is put at approximately £1 million. The future deficiency is put at £850,000 a year, or, after charging interest on the present debenture issue £1,220,000. It is estimated that in the next few years the increase in road and rail passenger fares and economies in maintenance and operating costs recommended, together with allowance for some increase in traffic, will convert the deficiency of £850,000 into a net revenue of £150,000 or £220,000 short of the amount required for debenture interest. If the burden of track costs is equalised and licence duties on long-distance road services are increased, it is reasonable to anticipate that with a progressive increase in traffic and reduction in expenditure, the net revenue over a longer term should increase to £800,000, or sufficient to pay the maximum dividend on the common stock after meeting interest amounting to £550,000 on a larger debenture stock issue.

The report is signed by Sir James Milne, and the following were parties to and co-signatories:—

Mr. T. W. Royle, C.V.O., M.B.E.: Formerly Vice-President, London Midland & Scottish Railway; Past President of Institute of Transport.

Mr. L. C. Glenister: Formerly Chief Accountant, London & North Eastern Railway.

Mr. W. J. Elliott: Formerly General Manager and now Director of Hay's Wharf Cartage Group (including Pickfords Limited and Carter Paterson & Co. Ltd.).

In addition the undermentioned officers were loaned as technical assessors by the British Transport Commission and the Railway Executive:—

Mr. A. S. Quartermaine, C.B.E.: Chief Engineer, Western Region; Vice-President of Institution of Civil Engineers.

Mr. O. V. Bulleid: Chief Mechanical Engineer, Southern Region; Past President of Institution of Mechanical Engineers.

Mr. A. W. Tait: Assistant to Chief Accountant, Western Region.

Ulster Transport Tribunal

The Transport Tribunal (First Chairman) Bill, which provides for the appointment of Lord Justice Babington as Chairman of the Tribunal, was passed recently in the Northern Ireland House of Commons.

Major Perceval-Maxwell, Parliamentary Secretary to the Ministry of Commerce, said that the Tribunal would perform a task which had never been achieved in Ulster before, that was to say, a complete periodic revision of the whole of rates, fares and the classification of goods for both road and rail; it would also consider and adjudicate on any application for the closing down of means of transport; and would hear and determine appeals by the public in respect of excessive rates and fares or inadequate transport facilities.

The Tribunal would be a court of record, and in the first few years it was in existence the original revision of rates and fares would have to take place, an arduous and laborious task.

The Government felt, said the Parliamentary Secretary, that such a court must have as its Chairman a man not merely of the highest ability, but of wide judicial experience.

Mr. Beattie (Pottinger—Ind. Lab.) said that no one would dispute the qualification of Lord Justice Babington, but the principle underlying the whole idea was one that the House should condemn.

They could have had the Tribunal at one-third the cost. There were junior barristers who would have been glad to give their knowledge and experience to the service of the Transport Authority.

Mr. Healy (Fermanagh—Nationalist) said that it would take 95,000 fares at 2s. each to pay the salaries of Major Pope, Chairman of the Transport Authority, and Lord Justice Babington.

Mr. Quin (Queens University—Unionist) postponed a question to the Parliamentary Secretary concerning the progress of negotiations for the acquisition of the Northern Counties Railway by the Authority and the position as to the Great Northern Railway (Ireland).

Questions in Parliament

Railway Construction in Tanganyika

Colonel A. D. Dodds-Parker (Banbury—C.) on December 8 asked the Secretary of State for the Colonies whether he could make a statement on the construction of the railway from the Tanganyika central railway to the lead mines at Uruwira; whether, in view of the recent reports that the prospects of large-scale mineral operations in that area seemed unlikely, it was proposed to continue with the construction of the railway; and what amount had been spent to date.

Mr. D. R. Rees-Williams (Parliamentary Under-Secretary of State for the Colonies): There is no indication at present that the estimated quantity of basic ore is less than that which was considered sufficient to justify the construction of the railway, which is proceeding. The whole question will, however, be considered by the Transport Advisory Council on December 10 in the light of the latest information. Expenditure on the construction of the branch line to July amounted to £121,786, and the estimated expenditure in August was £21,431.

Mr. F. J. Erroll (Altrincham & Sale—C.): Would it not have been very much better to have built a road in the first place, and only to have built a railway when proved traffic was found to exist?

Mr. Rees-Williams: The Tanganyikan Government did not think so.

Notes and News

Senior Draughtsman Required.—A senior draughtsman, with experience in railway locomotive motion design, is required by a firm of manufacturers in Birmingham. See Official Notices on page 763.

Assistant Establishment Officer Required.—Applications are invited from qualified candidates for the post of assistant establishment officer required by the Government of Nigeria for the railway department for one tour of 18 to 24 months, with prospect of permanent pensionable employment. See Official Notices on page 763.

Metropolitan-Cammell Carriage & Wagon Co. Ltd.—In an advertisement in the current issue of wagons produced by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., of Saltley, Birmingham, it is stated that the examples shown are of orders now in production. This should read "examples of orders recently completed or now in production."

"Carry On" Music Hall Broadcast.—Some of the stars from *Carry On* Music Hall, the London Midland Region's popular amateur show, broadcast in the B.B.C. Home Service on December 22, between 12.30 and 12.55 p.m. They were: Clerks Eileen and Gwen (Euston); Stationmaster, Euston, H. S. Turrell; Porter Jack Ody (Euston); Clerk George Kirby (Euston); Enquiry Clerk Ann Allane (Euston); Motor-Driver Jim Purchase (St. Pancras); Clerk Bernard Hunt (Camden), and his band. The show was broadcast from Camden staff canteen, in the "Works Wonders" programme.

Milne Report on Irish Transport.—Mr. D. Morrissey, Irish Minister for Industry & Commerce, referred to public transport in Eire at a complimentary dinner in Dublin on December 21 to Senator J. T. O'Farrell, retiring Irish Secretary of the Railway Clerks' Association. He said that in Sir James Milne's report they had got the results of inspections and investigations and there would be no delay that could be avoided in dealing with the problem. The Government took a very serious view of it and would carry out the new scheme without any avoidable delay.

Sales Engineer Required.—A firm of anti-friction bearing manufacturers has a vacancy for a railway engineer, between 25 and 30 years of age, as sales engineer specialising in railway work. See Official Notices on page 763.

General Manager Required.—Applications from qualified candidates, preferably between 40 and 45 years of age, are invited for the post of General Manager of a British railway in Africa. See Official Notices on page 763.

Permanent Way Institution Convention.—The 1949 Convention of the Permanent Way Institution, which is to be held in Dublin, will not only be for the London Section, as stated in our December 17 issue, but for the whole Institution.

R.T.E. Acquisitions.—The Road Transport Executive had acquired up to the end of November, 171 freight undertakings, of which 23 were taken over during the month of November. Of the November acquisitions, six undertakings ranked as primary (or holding) companies.

Clerk, Grade II, Required.—A clerk grade II, not over 30 years of age, is required by the East African Railways & Harbours administration for the accounts department, for one tour of 40 to 48 months with prospects of permanency. See Official Notices on page 763.

Railway Students' Association.—A paper entitled: "Tourism—A Vital Export" will be read before the Railway Students' Association by Lord Hacking, Chairman of the Travel Association, on Wednesday, January 12. The meeting will be held at the London School of Economics & Political Science, Houghton Street, Aldwych, London, W.C.2, at 6 p.m.

United Havana Tax Reimbursement.—The Cuban Government has approved a draft decree to continue for a further twelve months the reimbursement of United Havana Railways to the extent of 2·75 per cent. of gross income tax paid. This decree would extend the previous order until December 31, 1949. This reimbursement is intended to help the railway to pay a five per cent. wage increase ordered by the Government earlier this year and which the company alleged it could not pay.

North Central Wagon & Finance Company.—At the annual general meeting on December 15, Mr. E. Duncan Taylor, Chairman, said that the net profit of £54,990 showed an increase of £5,179, while the disposable balance, including provision for income tax in earlier years no longer required, amounted to £102,977. After providing the preference dividend, an interim dividend of 6d. a share, less tax, on the ordinary share capital, and transferring £30,000 to reserve account and £10,000 to pensions reserves, the balance carried forward was £33,414. It had been their intention to recommend that £75,000 should be applied in paying up a further 1s. a share on the ordinary shares, but in view of the unjustifiable levy of 10 per cent. imposed by the Finance Act, 1947, the board proposed to defer consideration of this proposal until the ill-considered

"School-on-Wheels" in Scotland

Motive Power Instructional Train being inspected at Glasgow St. Enoch, on December 6 before departing on tour of Scottish Region (see article on page 752). Left to right: Mr. R. Simpson, Regional Staff Officer; Mr. T. H. Moffat, Deputy Chief Regional Officer; Mr. G. S. Bellamy, Mechanical & Electrical Engineer; Mr. T. F. Cameron, Chief Regional Officer; and Mr. R. F. Harvey, Motive Power Superintendent, Scottish Region

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

RUSTON & HORNSBY DIESEL LOCOMOTIVES, 4 wheel, chain driven, 24 in. gauge, 3-speed gear box, forward or reverse, with Lister 2-cyl. vertical water-cooled engine, 600 r.p.m.
Two 20-h.p.: Overall dimensions, 8 ft. 6 in. long, 3 ft. 2 in. wide, 6 ft. 4 in. high, with driver's cabin 3 ft. 8 in. × 3 ft. 2 in. × 4 ft. 8 in high.
Three 10 h.p.: Overall dimensions, 9 ft. long, 3 ft. 2 in. wide, 5 ft. high. Open type.
Condition equal to new, ready for immediate use.
May be inspected at our works.
COX & DANKS LIMITED,
Plant & Machinery Dept.,
SCAPA WORKS, NEATH, GLAMORGAN.
'Phone: NEATH 2205.

SECTIONED PERSPECTIVE VIEW OF LOCOMOTIVE FRONT END. A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type. Reprinted from *The Railway Gazette*, June 15, 1945. *Price* 2*s.* 6*d. Post free* 2*s.* 8*d.*

THE FIRST PASSENGER RAILWAY. By Charles E. Lee. A history of the Swansea & Mumbles Railway, which extends over 136 years. Cloth. 8¼ in. by 5½ in. 91 pp. Illustrated. 5*s. By post* 5*s.* 3*d.*

MECHANICAL APPLIANCES FOR HANDLING RAILWAY TRAFFIC. By G. Bulkeley. An explanation of the employment of mechanical apparatus for handling and carting general goods. Cloth. 7½ in. by 5 in. 132 pp. Illustrated. 5*s. By post* 5*s.* 3*d.*

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—
CLERK GRADE II required by the East African Railways and Harbours Administration for the Accounts Department, for one tour of 40 to 48 months, with prospects of permanency. Salary according to age and experience in the scale £462 by £18 to £570 a year. Free quarters and passages. Outfit allowance £30. Candidates, not over 30 years, must hold a General Schools Certificate, and have had experience in Head or District Office Railway Revenue Accounting methods. Knowledge of station accounting an advantage. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/17930 (3E) on both letter and envelope.

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—
ASSISTANT ESTABLISHMENT OFFICER required by the Government of Nigeria for the Railway Department for one tour of 18 to 24 months, with prospect of permanent pensionable employment. Salary, including expatriation pay, in scale £600 rising to £970 a year. Commencing salary according to age, qualifications and experience. Outfit allowance £60. Free passages and liberal leave on full salary. Candidates not over 35 must have matriculated and should preferably hold a B.Com. or B.Sc. (Econ.) degree or have completed a recognised secretarial course. Experience in dealing with staff matters, not necessarily of a transport undertaking, will be an advantage. Apply at once by letter stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/21847/3C on both letter and envelope.

ANTI-FRICTION bearing manufacturers have opening for Railway Engineer, aged 25-30, as Sales Engineer specialising in railway work. Railway apprenticeship desirable. Salary according to qualifications. Reply giving details of education and experience to Box 245, *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1.

RAILWAY AMALGAMATION IN GREAT BRITAIN. By W. E. Simnett. An authoritative account of the course of railway amalgamation in Great Britain up to the end of 1923. Cloth. 8¼ in. by 5¼ in. 276 pp. 15*s. By post* 15*s.* 7*d.*

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. *Price* 2*s. Post free* 2*s.* 3*d.*

APPLICATIONS from qualified candidates, preferably between the ages of 40 and 45, are invited for the post of General Manager of a British Railway in Africa. The post is an important one and candidates will only be considered if they have held senior administrative or technical post and have a wide experience of railway operating. Salary, including representation allowance, £900 p.a.; contributory pension scheme, free unfurnished quarters, free medical attention. Free first class passages will be provided for the successful applicant and his wife. Write stating age, whether married or single, qualifications, details of experience and present position, as early as possible to: Box "J.V.," c/o I. W. VICKERS & Co. LTD., 7/8, Great Winchester Street, E.C.2.

SENIOR DRAUGHTSMAN required with experience in Railway Locomotive Motion design.—Apply by letter to BRITISH TIMKEN LIMITED, Cheston Road, Aston, Birmingham, 7.

imposition was withdrawn. As the revenue from simple and redemption hire of railway wagons virtually ceased on December 31, 1947, the increase of £32,419 in the net revenue of the parent company from rents and other profits, reflected the development on the new avenues of business to which he referred last year. Further realisation of holdings in Wagon Repairs Limited produced a surplus of £34,900, which, together with a capital accretion of £7,586 arising on the revaluation at par of their holding in a subsidiary, had been added to capital reserve account, which was now £124,098.

Crompton Parkinson Profits Increased.—The net profit of Crompton Parkinson Limited for the year ended September 30 was £522,065 as compared with £450,895 for the previous twelve months. A final dividend of 7½ per cent., plus a special bonus of 7½ per cent., again makes 22½ per cent. on the ordinary and "A" ordinary shares and stocks. An amount of £596,932, being provisions no longer required and profits relating to previous periods, makes an available balance of £1,656,506 to be carried forward.

Fluorescent Lighting at New Central Line Stations.—The fluorescent lighting fittings at the new Central Line stations at Bethnal Green, Gants Hill, Wanstead, and Redbridge, were supplied by the British Thomson-Houston Co. Ltd. Occasional emergency fittings, equipped with tungsten lamps to provide a standard of comparison between old and new forms of lighting, have been designed for easy lamp replacement. The auxiliary gear for each lamp is housed in a shallow metal trough at each end of which a bracket arm carries a spring-loaded lamp holder. The lamps are all of 80-W. daylight type, some operating on 331/2 cycles a.c., and others on 50 cycles. Two independent current supplies are used as a precaution against breakdown. A photograph of the concourse provided at the new Gants Hill Station was reproduced on page 670 in our December 10 issue.

Mozambique Railway Equipment Tenders.—The Portuguese General Colonial Agency (Agencia Geral das Colonias) has called for tenders to supply the following railway equipment for the Mozambique railways: 1,866 rails, 24 metres long, weighing 44,640 kg.; 3,723 fishplates; 11,196 screws; 6 sets of points complete. Bids must be made in Portuguese colonial escudos or South African pounds, per kg., with the exception of the points sets, and must cover delivery to the quayside at Lourenço Marques. Tenders close on March 21, 1949. Further information may be obtained from the Agencia Geral das Colonias, Rue de S. Pedro de Alcantara, 81, Lisbon; or from 2a, Secçao do Armazens Gerais de Direcçao dos Caminhos de Ferro, Lourenço Marques.

Grassmoor Road Bridge, L.M.R.—A new bridge to carry Bennett Street, Grassmoor, nr. Chesterfield, over the Grassmoor branch line of the London Midland Region of British Railways, will shortly be built to replace an old bridge of 1872 and a temporary bridge built in 1946 when the old bridge became unfit for traffic.

Opening of British Railways Police School

Lieut.-Colonel Sir Hugh Turnbull, Commissioner of Police, City of London, accompanied by Mr. G. V. Frankton, Commandant, Mr. V. M. Barrington-Ward and Mr. R. A. Riddles, Members of the Railway Executive, inspecting the British Railways Police School at Tadworth, Surrey, after the formal opening *(see editorial note on page 738 and article on page 754)*

This new bridge, for the construction of which a contract has been placed with Fletcher & Co. (Contractors) Ltd., Mansfield, will be erected on the site of the old bridge, portions of which will be retained. The bridge will be built to the width of the existing one, 25 ft. 6 in., but provision will be made for future widening to 45 ft. between parapets to match the proposed widening of the roadway.

East Indian Railway Company.—A meeting of the annuitants of all classes of the East Indian Railway Company will be held at the company's offices, 73-76, King William Street, London, E.C.4, on January 5, at 2 p.m.

London Busmen Overtime Dispute.—Efforts are being made by the T.G.W.U. to avert a threatened strike by London busmen on Saturday afternoons, as from January 1, with the object of enforcing a demand for time-and-a-half pay in respect of Saturday afternoon work. At branch meetings representing more than 100 of the 126 garages, held early in the week, support was given to the proposal to strike unless the demand was met. Lord Latham, Chairman of the London Transport Executive, agreed to meet representatives of the men on Thursday morning of this week.

Forthcoming Meetings

December 31 (*Fri.*).—Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2, at 2.30 p.m. Dr. Mann Juvenile Lecture: "Model Railways," by Mr. W. J. Bassett-Lowke.

January 3 (*Mon.*).—Institute of Transport, Metropolitan Section, at Livingstone House, Broadway, S.W.1, at 5.30 p.m. for 6 p.m. "The Effect of Nationalisation on Air Transport," by Mr. J. W. S. Brancker.

January 4 (*Tue.*).—Institute of Public Administration, at Livingstone Hall, Broadway, London, S.W.1, at 6.15 p.m. Organisation of Large Scale Activities: Introductory Address, by Mr. J. R. Simpson, Director of Organisation and Methods, H.M. Treasury.

January 5 (*Wed.*).—Institute of Traffic Administration, Birmingham Centre, at the Chamber of Commerce, at 7 p.m. "Maintenance and Upkeep of Road Vehicles," by Mr. F. A. Paul.

January 6 (*Thur.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas Street, London Bridge, S.E.1, at 5.45 p.m. "Some Examples of Suburban Traffic Operation," by Mr. C. F. Klapper, Assistant Editor, *Modern Transport*.

January 6 (*Thur.*).—British Railways, Western Region, London Lecture & Debating Society, in the Clerks' Dining Club, Bishop's Bridge Road, Paddington, at 5.45 p.m. "The Provision and Working of Coaching Stock," by Mr. C. W. Powell, Divisional Superintendent, London, Western Region.

January 7 (*Fri.*).—Railway Students' Association, London School of Economics & Political Science; visit to Lots Road Power Station, at 6 p.m.

January 8 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society; visit to the Blood Transfusion Service, Blood Supply Depot, Sutton.

Railway Stock Market

Stock markets are firm, with business tending to increase after the contraction during the pre-holiday week, when recorded dealings went to their smallest level since 1944. There has been very little selling. A year ago markets were stimulated by interest in the pending initial dealings in 3 per cent. Transport stock (1978-88). There was also much discussion and conjecture as to whether the cheap money policy of Mr. Dalton would be continued by Sir Stafford Cripps. There does not seem to have been any pronounced official support for the market during the past twelve months. Either by accident or design or both, however, more indirect methods have provided a gradual stimulus to gilt-edged. Dividend limitation and the Bonus Tax have robbed industrial shares of their normal attractions. In recent months the bulk of money seeking investment, and also the large sums made available by Argentine railway pay out money, have been placed in British Funds until the general investment position can be assessed more clearly. The gilt-edged market may turn easier for the moment because £40,000,000 has to be found for the next instalment on the new Electricity stock due on January 3.

Now that 3 per cent. Transport (1978-88) seems reasonably well re-established at £100, at which it was issued a year ago, the market is asking whether the upward trend in gilt-edged is likely to make further progress. General belief is that the rise may continue at least for the next few months when Budget considerations may tend to switch a good deal of attention to industrial shares in the hope that Sir Stafford Cripps may decide to relax or abolish the Bonus Tax and dividend limitation. Already some Stock Exchange firms are drawing the attention of investors to shares of companies which would then have reasonable prospects of dividend increases or a share bonus. The view in the City is that the Bonus Tax is the more likely to go because dividend limitation would not be lifted or materially relaxed unless the Government had to admit failure of its efforts in requesting workers not to press for higher wages. With the policy of relaxing controls likely to be carried further in the next few months, many industries will face changing conditions and increasing competition. This may well mean lower earnings and dividends for companies unable to increase output or turnover. Under such conditions it will be only fair to allow shareholders in companies able to increase output to pay higher dividends.

With Senor Machado due in Britain from Brazil in January, there may be a revival of market talk of pending take-over developments in respect of the Leopoldina and Great Western of Brazil railways. The big fluctuations which have taken place in the past twelve months in the stocks of these companies were shown in these notes a week ago. At current levels they appear moderately valued if the terms are to be reasonable, and consequently there may be a strong revival of speculative activity from time to time. With the probable exception of the debentures, however, they must all be regarded as carrying a good deal of risk, and also there is the possibility that, even if Brazil decides on take-over, actual compensation money might not be available until 1950.

At the time of writing, Antofagasta and Nitrate Rails have not responded to the bright outlook indicated for the nitrate industry in 1949. Canadian Pacifics at around 23½ have responded further to the big increase in the investment income which has induced confidence that C.P.R. will be able to maintain its dividend. Road Transport shares have been active and firmer, with the hope that British Transport will maintain dividends at the same rate as last year on road transport concerns which it controls, but which still have a small balance of their shares quoted on the Stock Exchange.

Traffic Table of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffics for week: Total this year	inc. or dec. compared with 1946/47	No. of week	Aggregate traffics to date: Total 1947/8	Increase or decrease
				£	£		£	£
South & Central America	Antofagasta...	811	19.12.48	72,680	+ 5,338	51	2,827,660	+ 545,538
	Bolivar ...	174	July, 1948	$28,960	− $69,357	30	$471,287	− $301,893
	Brazil ...	—	—	—	—	—	—	—
	Cent. Uruguay	970	6.11.48	32,712	+ 2,978	18	595,105	− 7,652
	Costa Rica ...	281	Oct., 1948	32,228	+ 2,750	18	143,847	+ 15,796
	Dorada ...	70	Nov., 1948	32,667	+ 8,367	48	305,908	− 19,292
	G.W. of Brazil	1,040	18.12.48	46,100	+ 800	50	1,703,500	− 27,200
	Inter. Ctl. Amer.	794	Oct., 1948	$955,810	+ $35,968	44	$11,070,758	+ $167,793
	La Guaira ...	22½	Nov., 1948	$109,836	+ $20,483	48	$1,158,353	− $6,894
	Leopoldina ...	1,920	11.12.48	50,191	− 10,481	49	2,756,681	− 496,931
	Midland Uruguay	319	Sept., 1948	19,608	+ 3,123	12	67,355	+ 16,721
	Nitrate ...	382	15.12.48	14,364	+ 2,353	50	300,074	+ 81,887
	N.W. of Uruguay	113	Sept., 1948	5,686	− 1,213	12	16,335	+ 1,989
	Paraguay Cent.	274	17.12.48	£108,956	+ £43,893	50	£2,496,823	+ £979,902
	Peru Corp.	1,059	Nov., 1948	201,617	+ 56,049	21	954,690	+ 112,982
	Salvador ...	100	Sept., 1948	c82,000	+ c4,000	13	c247,000	+ c12,000
	San Paulo ...	153½	—	—	—	—	—	—
	Taltal ...	156	Nov., 1948	6,790	− 1,290	22	38,520	+ 6,170
	United of Havana	1,301	4.12.48	46,164	− 9,489	22	975,625	− 391,822
	Uruguay Northern	73	Sept., 1948	1,072	+ 52	12	3,308	+ 111
Canada	Canadian National...	23,473	Aug., 1948	10,110,000	+ 855,250	35	77,676,250	+ 5,854,000
	Canadian Pacific	17,037	Oct., 1948	8,613,250	+ 1,159,000	44	72,510,000	+ 6,823,500
Various	Barsi Light†	202	Nov., 1948	39,090	+ 12,360	35	220,792	+ 20,077
	Beira ...	204	Sept., 1948	123,677	− 3,737	52	1,410,947	+ 243,048
	Egyptian Delta	607	30.10.48	19,211	+ 1,455	26	328,731	+ 31,899
	Gold Coast	536	Oct., 1948	217,730	+ 118,047	31	1,401,622	+ 374,708
	Manila ...	—	—	—	—	—	—	—
	Mid. of W. Australia	277	Oct., 1948	31,467	+ 8,707	18	113,713	+ 25,391
	Nigeria ...	1,900	Sept., 1948	412,268	+ 62,429	25	2,617,491	+ 531,086
	Rhodesia ...	2,445	Sept., 1947	643,980	+ 102,833	52	6,787,603	+ 612,938
	South Africa	13,347	27.11.48	1,426,113	+ 101,665	35	46,137,458	+ 2,691,173
	Victoria ...	4,774	June, 1948	1,358,791	+ 248,144	52	—	—

† Receipts are calculated @ 1s. 6d. to the rupee